

For NEDO  
Summary Report

# Measures for Promotion of Indo Japan Joint R&D

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Automotive Industry Consulting Group

NRI Consulting & Solutions India Pvt. Ltd.

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**NRI**

*Share the Next Values!*



# Executive Summary

## Purpose of the study:

- Research collaboration between India and Japan is limited as compared to India & West
- Limited knowledge of the Indian research ecosystem is one of the key reasons
- In order to increase awareness of Japanese researchers, funding organizations & industry players about the Indian research ecosystem, this study was undertaken by NEDO in collaboration with Nomura Research Institute

The study touches upon four key pillars:

## Introduction to Indian Institutions

- A brief overview of the different types of Indian Institutions is provided, along with number of institutions in each type, their entrance methodology, and the top institutes
- This will provide the end users a glimpse into the Indian research ecosystem

## Ranking Institutions & Researchers

- Commonly used researcher indices such as **h index**, **i10 index**, **m index**, **total citations** are explained
- Overview of prominent ranking systems for Institutions across the globe are explained
- **QS ranking system** was suggested as the preferred ranking system for the Indian context as it balances between the number of ranked Indian Institutions and key ranking parameters
- This will help in Identifying the most relevant researchers from a longlist

## Database Introduction & Recommendation

- Information on various Indian researcher databases was provided
- **VIDWAN and Scopus Researcher Discovery** were suggested as suitable databases for the Indian context
- A guide to search researchers through VIDWAN was created for new users

## Domain wise case study

- Insights into the trend and growth of research in a field is provided by capturing research statistics, institutions, researchers, and highly cited publications
- A guide to create the case study through Scopus was created for new users

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## Purpose of the study

# This study aims to increase awareness of Japanese users about Indian research Institutions, researcher & institute rankings and finding Indian researchers

- In order to increase awareness of Japanese researchers, funding organizations & industry players about the Indian research ecosystem, this study was undertaken

## Key Areas



### Information about Indian Institutions

- Insights about the Indian Institute would help Japanese users in
  - Selecting a researcher based on their institute
  - Developing overview of the institute for a preferred researcher



### Ranking (Researcher, institute, etc.)

- Overview on some widely accepted rankings (for researchers & institutes) would help Japanese users in
  - Identifying the most relevant researchers from a longlist



### Finding Researcher

- Information on Indian researcher databases and guide would help Japanese users in
  - Finding longlist of researchers based on area of expertise
  - Searching & contacting the relevant researcher

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# Indian Research Institutions can be divided in educational & R&D institutions

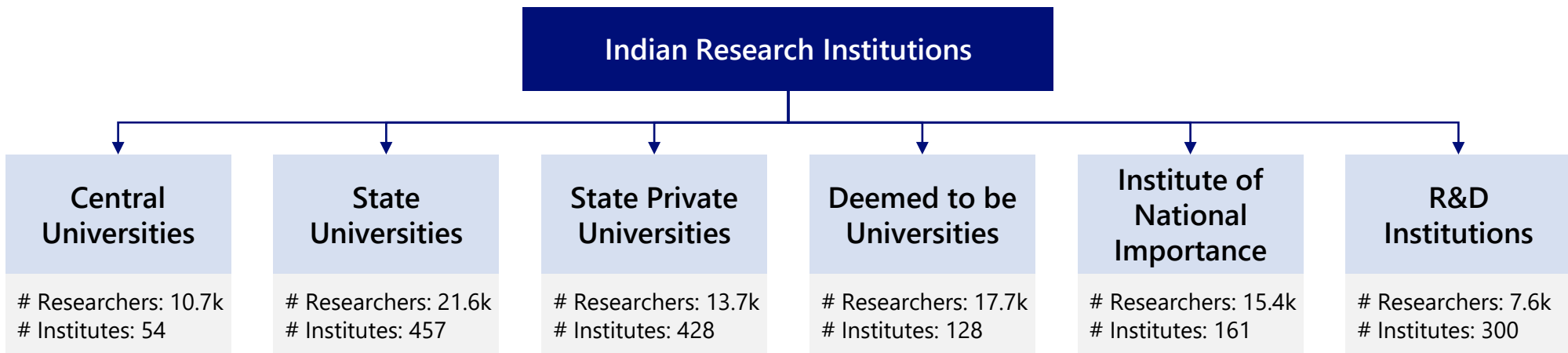
## Profs. & students in educational & Scientists in R&D institutions are key researchers

### About

- Indian research organisations can be categorised in two types, educational institutions and R&D institutions
- Educational Institutions:
  - Indirectly controlled (jointly or individually) either by **Ministry of Education, state govt., or Union govt.**
  - Different type of educational institutions receive different levels of investment and hence have varying level of research outputs
- R&D Institutions:
  - Come under umbrella of Council of Scientific and Industrial Research (CSIR), Indian Council of Agricultural Research (ICAR), Department of Atomic Energy (DAE), and other ministries supporting certain research laboratories



### Key Institutions Types



# 54 Central Universities in India with ~10,756 researchers remain under the purview of Ministry of Education (MoE)

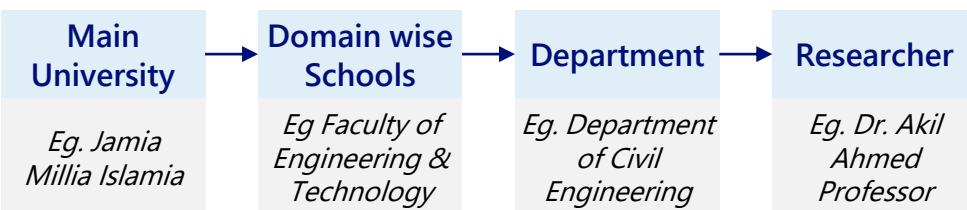
## About

- Categorized under Centre (Union Government), (funds are allocated by the Ministry of Education through UGC)

## Key Statistics

# Institutions	54 (40 under MoE, 9 autonomous)
Incorporated under	Certain Acts of Parliament
Govt. Department	Department of Higher Education in Ministry of Education
# Researchers	~10,756
Oldest Institution	Allahabad University

## University Structure



## Top 5 Institutes (as per NIRF)

1	Jawaharlal Nehru University	NIRF University Rank: 2
2	Jamia Millia Islamia	NIRF University Rank: 3
3	Banaras Hindu University	NIRF University Rank: 6
4	University of Hyderabad	NIRF University Rank: 10
5	Aligarh Muslim University	NIRF University Rank: 11

## Entrance Methodology

- Common University Entrance Test or CUET is a common entrance test for admission to UG courses in all central universities



# 457 State universities across India with ~21,679 researchers remain under the purview of State & Union Territory governments

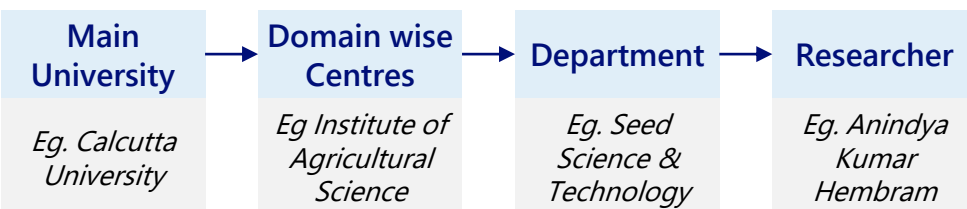
## About

- These are public universities run by state government of each of the state & territories of India

## Key Statistics

# Institutions	457
Incorporated under	Local Legislative Assembly Act
Govt. Department	State Governments
# Researchers	~21,679
Oldest Institution	University of Calcutta, Madras & Mumbai (1857)

## University Structure



## Top 5 Institutes (as per NIRF)

1	Jadavpur University	NIRF University Rank: 4
2	Calcutta University	NIRF University Rank: 8
3	Savitribai Phule Pune University	NIRF University Rank: 12
4	Bharathiar University	NIRF University Rank: 15
5	Anna University	NIRF University Rank: 20

## Entrance Methodology

- All the state universities in India conduct different entrance exams for admissions to a variety of courses

# 428 State private universities across India with ~13,747 researchers, these are recognised by central/state governments and run by sponsoring bodies

### About

- Established through a central/state act
- Run by a sponsoring body viz. A Society (registered under the Societies Registration Act 1860), or a Public Trust or a Company (registered under the Companies Act, 1956)

### Key Statistics

# Institutions	428
Recognized under	Central/Local Legislative assembly act
Govt. Department	Department of Higher Education, MoE/State Governments
# Researchers	~13,747
Oldest Institution	Sikkim Manipal University (1995)

### University Structure



### Top 5 Institutes (as per NIRF)

1	Amity University, Noida	<i>NIRF University Rank: 22</i>
2	Chandigarh University	<i>NIRF University Rank: 29</i>
3	Lovely Professional University	<i>NIRF University Rank: 47</i>
4	Shiv Nadar University	<i>NIRF University Rank: 61</i>
5	University of Petroleum and Energy Studies	<i>NIRF University Rank: 65</i>

### Entrance Methodology

- Multiple private universities conduct different entrance exams for admissions to a variety of courses

# 128 Institutions both of public (central/state) & private with ~17,736 researchers are declared by Central Govt as 'deemed-to-be-university'

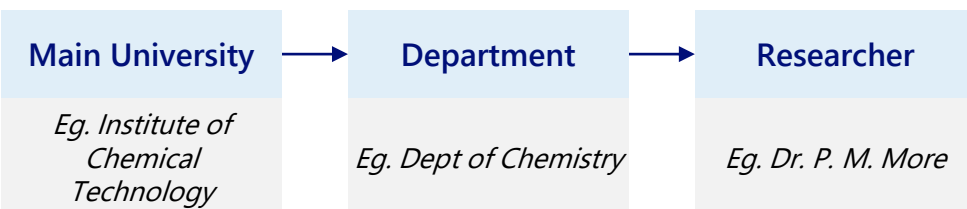
### About

- Institutions working with high standard in specific area of study, are sometimes declared as 'Deemed-to-be-university' by Central Govt.
- Enjoy academic status and privileges of a university and can be either private or public (central/state)

### Key Statistics

# Institutions	128
Recognized under	Central/Local Legislative assembly act
Govt. Department	Department of Higher Education, MoE/State Governments
# Researchers	~17,736
Oldest Institution	IISc Bangalore, Indian Agricultural Research Institute (1958)

### University Structure



### Top 5 Institutes (as per NIRF)

1	Amrita Vishwa Vidyapeetham	NIRF University Rank: 5
2	Manipal Academy of Higher Education	NIRF University Rank: 7
3	Vellore Institute of Technology	NIRF University Rank: 9
4	Institute of Chemical Technology	NIRF University Rank: 14
5	Siksha `O` Anusandhan	NIRF University Rank: 16

### Entrance Methodology

- Multiple public & private universities conduct different entrance exams for admissions to a variety of courses

# 161 Institutions with ~15,461 researchers receive special recognition as Institute of National Importance; Have high overall institute ranking

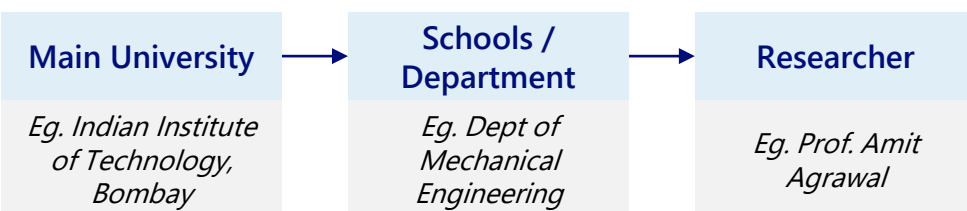
## About

- Status conferred on premier public higher education institutions by an act of Parliament
- They receive special recognition, higher autonomy and funding from the Government of India

## Key Statistics

# Institutions	161
Established under	Central act
Govt. Department	Department of Higher Education, MoE
# Researchers	~15,461
Oldest Institution	Indian Institute of Technology, Kharagpur (1956)

## University Structure



## Top 5 Institutes (as per NIRF)

1	Indian Institute of Technology Madras	NIRF Overall Rank: 1
2	Indian Institute of Science	NIRF Overall Rank: 2
3	Indian Institute of Technology, Bombay	NIRF Overall Rank: 3
4	Indian Institute of Technology, Delhi	NIRF Overall Rank: 4
5	Indian Institute of Technology Kanpur	NIRF Overall Rank: 5

## Entrance Methodology

- Key competitive exams like Joint Entrance Examination (JEE), National Eligibility cum Entrance Test (NEET), Common Entrance Test (CAT), Graduate Aptitude Test in Engineering (GATE), etc. are entrance exams for Institutes of National Importance

## Introduction to Indian Institutions | R&D Institution

~300 institutions with ~7667 researchers from R&D institutions specialize in research; Funded & incorporated under variety of Govt. Acts & Depts.

### About

- Do not grant a degree nor are affiliated to a degree granting university
- Engaged in pure or applied research across areas

### Key Statistics

# Institutions

~300

Incorporated under

Acts across years & industries

Govt. Department

Multiple govt. department

# Researchers

~7,667

Oldest Institution

Indian Association for the Cultivation of Science (1876)

### University Structure

Main University

*Eg. Tata Institute of Fundamental Research*



Center / Department

*Eg. Dept of Biological Sciences*



Researcher

*Eg. Debasis Das*

### Notable Institutes

- 1 Indian Space Research Organization
- 2 Bhabha Atomic Research Centre
- 3 Tata Institute of Fundamental Research
- 4 Central Rice Research Institute
- 5 Indian Agricultural Research Institute

### Entrance Methodology

- Fellowships for starting off research at R&D institutes
- Job openings for higher positions

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# h-index and total citations are most widely accepted and commonly used indices to evaluate researchers quantitatively

Indices	Description	Advantages	Disadvantages
 h index	<ul style="list-style-type: none"> <li>Captures total count and impact by citation of publications</li> </ul>	<ul style="list-style-type: none"> <li>Assesses quantity (no. of papers) and quality (citations of papers)</li> <li>Ignores extreme low &amp; high-citations</li> </ul>	<ul style="list-style-type: none"> <li>Ignores # authors &amp; individual author contribution</li> </ul>
i10 index	<ul style="list-style-type: none"> <li>No. of publications with at least 10 citations</li> </ul>	<ul style="list-style-type: none"> <li>Very simple and straightforward to calculate</li> <li>Assesses quantity &amp; quality of papers</li> </ul>	<ul style="list-style-type: none"> <li>Used solely by Google Scholar</li> <li>Becomes stagnant once all papers reach 10 citations</li> </ul>
g index	<ul style="list-style-type: none"> <li>Alternative for h-index, gives more weightage to highly cited papers</li> </ul>	<ul style="list-style-type: none"> <li>Averages citations of highly cited papers</li> <li>Variance of g-index &gt; h-index (comparing authors is more apparent)</li> </ul>	<ul style="list-style-type: none"> <li>Not as widely accepted as h index</li> <li>Saturates when avg. no. of citations for papers exceeds total no. of papers</li> </ul>
m index	<ul style="list-style-type: none"> <li>h index divided by no. of years the researcher has been active</li> </ul>	<ul style="list-style-type: none"> <li>Compare researchers with different career lengths</li> </ul>	<ul style="list-style-type: none"> <li>Averages productivity throughout career (may not reflect current situation)</li> <li>Can be a fraction</li> </ul>
 Total citations	<ul style="list-style-type: none"> <li>Total no. of citations of all documents authored by the researcher</li> </ul>	<ul style="list-style-type: none"> <li>Very simple and straightforward to calculate</li> <li>Assesses quantity &amp; quality of papers</li> </ul>	<ul style="list-style-type: none"> <li>Does not review citation text</li> <li>Can be inflated by large no. of low cited papers</li> </ul>
Citations per paper	<ul style="list-style-type: none"> <li>Average citation received per document</li> </ul>	<ul style="list-style-type: none"> <li>Not skewed by few low &amp; high citation articles</li> </ul>	<ul style="list-style-type: none"> <li>Does not review citation text</li> <li>Does not account for # of publications</li> </ul>
Altmetrics	<ul style="list-style-type: none"> <li>Complementary to traditional metrics</li> <li>Indicates how often scholarly outputs are discussed and used around world</li> </ul>	<ul style="list-style-type: none"> <li>Augment traditional metrics</li> <li>Broader measurement for impact of research</li> </ul>	<ul style="list-style-type: none"> <li>Easily distorted or misinterpreted</li> <li>Attention indicators that may not measure scholarly quality or impact</li> </ul>

## Ranking Institutions & Researchers | Researcher ranking (2/2)

**h-index and total citations are calculated using citations in such a way that they measure both productivity and impact of the researcher's research output**

### h-Index

The highest number of publications that received h or more citations each while the other publications have not more than h citations each

#### Calculating h-index of Researcher A

Publication ID	Citations
1	8
2	29
3	4
4	15
5	105
6	3
7	42
8	17
9	20

*Descending order of no. of Citations*

Publication ID	Citations
5	105 >7
7	42 >7
2	29 >7
9	20 >7
8	17 >7
4	15 >7
1	8 >7
3	4 <7
6	3 <7

### Total citations

The total number of citations of all documents authored by the researcher







#### Calculating Total Citations of Researcher A

Publication ID	Citations
1	7
2	29
3	4
4	15
5	105
6	3
7	42
8	17
9	20
<b>Total (Total Citations)</b>	<b>242</b>

- Citation is an indicator of research impact; Total count of documents measures productivity
- Thus h-index and Total Citations are a measure of both impact & productivity



# QS balances between the # Indian Institutions and key ranking parameters, it has 118 institutions and captures research parameter of citation per faculty

Ranking	Developed by	# Indian Instn.	Year Started	Key Ranking Parameters	Limitations
	Quacquarelli Symonds <i>(British Company)</i>	118	2004	<ul style="list-style-type: none"> <li>Academic Reputation (40%)</li> <li>Faculty Student Ratio (20%)</li> <li><b>Citations per Faculty (20%)</b></li> </ul>	Captures institutions with >1000 papers and >50 papers indexed by Scopus (in 5yr period)
	Times Higher Education magazine	101	2004	<ul style="list-style-type: none"> <li>Teaching, Research, Citations, International Outlook, Industry Income</li> </ul>	Disproportionately <b>high (33%) weightage</b> to reputation captured by <b>survey</b>
	Springer Nature <i>(academic publishing company)</i>	409	2015	<ul style="list-style-type: none"> <li>Count of articles</li> <li>Capture universities, private and govt. organisations</li> </ul>	<b>Limited to Natural sciences</b> Does not account for quality of output (articles)
	SCImago Lab <i>(Consulting company &amp; Network of Research Groups)</i>	341	2009	<ul style="list-style-type: none"> <li>Research (50%),</li> <li>Innovation (30%)</li> <li>Societal (20%)</li> </ul>	Captures institutions with >100 publ. in SCOPUS in prev. year <b>Lack of international comparison</b>
	Cybermetrics Lab <i>(Research group of CSIC)</i>	5444	2004	<ul style="list-style-type: none"> <li>Visibility</li> <li>Transparency</li> <li>Excellence</li> </ul>	<b>High reliance on web metrics</b> (page views, time on links, link mentions, etc.)
	National Board of Accreditation, India	50	2015	<ul style="list-style-type: none"> <li>Teaching, Learning &amp; Resource (TLR) (30%)</li> <li>Research, Professional Practice &amp; Collaborative perf. (RPC) (30%)</li> </ul>	<b>Relies on institute reported data</b> Lack of international comparison
	Ministry of Education, India	1403	2018	<ul style="list-style-type: none"> <li>Budget &amp; Expenses</li> <li>Awareness Activities</li> <li>Entrepreneurship Support</li> </ul>	Focuses only on innovation Relies on institute reported data; Lacks international comparison

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# VIDWAN, NSTMIS, Scopus, ORCID, IEEE Explore, Google Scholar, Semantic Scholar are the key sources for obtaining researcher information

Database	Developed by	About
 VIDWAN Expert Database & National Researcher's Network	Information and Library Network Centre (INFLIBNET)*	<ul style="list-style-type: none"> <li>Find experts in given expertise / geography</li> <li>Database of researchers at Indian R&amp;D org.</li> <li>Aims to Improve faculty collaboration globally</li> </ul>
 NSTMIS	Dept. of Science & Technology, Gol.	<ul style="list-style-type: none"> <li>Collects data for S&amp;T policy planning</li> <li>Database of R&amp;D institutions, extramural</li> <li>projects &amp; Indian origin academicians</li> <li>Not updated frequently</li> </ul>
 Scopus®	Elsevier (Dutch company)	<ul style="list-style-type: none"> <li>Search literature and experts</li> <li>Largest abstract and citation database</li> <li>Only peer reviewed scientific literature from over 5000 publishers</li> </ul>
 ORCID	ORCID <i>Open Researcher &amp; Contributor ID</i>	<ul style="list-style-type: none"> <li>Provides a unique persistent id (can be shared)</li> <li>Affiliations, grants, publications, peer review</li> <li>can be connected to ORCID ID</li> <li>Researchers can keep information private</li> </ul>
 IEEE Xplore® <i>Digital Library</i>	IEEE Society <i>Institute of Electrical &amp; Electronics Engineers</i>	<ul style="list-style-type: none"> <li>Search scientific &amp; technical literature from IEEE and its publishing partners</li> <li>Over 5 million academic &amp; technical papers</li> </ul>
 Google Scholar	Google	<ul style="list-style-type: none"> <li>Search scholarly literature across the web</li> <li>Sources: publishers, professional societies, online repositories, other web sites, etc.</li> </ul>
 Semantic Scholar	Allen Institute for AI	<ul style="list-style-type: none"> <li>AI driven search tool for scientific literature</li> <li>Indexes over 200 million academic papers</li> <li>Source: publisher, web crawl, data provider</li> </ul>

## VIDWAN, ORCID and Scopus Researcher Discovery are the databases that allow filtering by country and searching by expertise

Databases	Access type	Filter by country	Search by Expertise
	Open access	✓	✓
	Funding Agency access	✓	✓
	Open access	X	X
	Open access	X	X
	Researcher Discovery	✓	✓
	Open access	X	X
	Public Data file	✓ *	✓ *
	Public API	✓ *	✓ *
	Member API	✓ *	✓ *
	Open access	X	✓
	Open access	X	X
	Open access	X	X

\* subject to information being public; For key terminologies used, refer Appendix page 71 & 72

# VIDWAN funding access & Scopus RD provide contact details & allow sorting of researchers; As Scopus RD is in pilot phase, VIDWAN is a more suitable solution

★ Key Parameters

Databases	Contact ★	Elaborate keyword search	Ongoing projects	Sort by metrics ★	Pricing	IDs linked	Challenges
 VIDWAN <small>Expert Database &amp; National Researcher's Network</small>	✓	○	✓	✗	Free	ORCID, Scopus, ResearcherId, Google Scholar	<ul style="list-style-type: none"> <li>No researchers sorting by metrics</li> <li>Searches not based on research publication abstract</li> </ul>
 VIDWAN <small>Expert Database &amp; National Researcher's Network</small> Funding agency access	✓	○	✓	✓	-	ORCID, Scopus, ResearcherId, Google Scholar	<ul style="list-style-type: none"> <li>Only available to agencies in India</li> <li>Limited to a single user</li> </ul>
 Scopus Researcher Discovery	✓	◎	✗	✓	NA	ORCID	<ul style="list-style-type: none"> <li>Feature in pilot phase</li> </ul>
 ORCID Public Data file	✗	○	✗	✗	Free <sup>#</sup>	ORCID, Scopus, ResearcherID, Google Scholar, Academia, etc.	<ul style="list-style-type: none"> <li>Data in XML format;</li> <li>UI not researcher friendly;</li> <li>Not all data is publicly available</li> </ul>
 ORCID Public API	✗	○	✗	✗	Free <sup>#</sup>	ORCID, Scopus, ResearcherID, Google Scholar, Academia, etc.	<ul style="list-style-type: none"> <li>UI needs to be created;</li> <li>Not all data is publicly available</li> </ul>
 ORCID Member API	✗	○	✗	✗	USD 1365-4370 <sup>#*</sup>	ORCID, Scopus, ResearcherID, Google Scholar, Academia, etc.	<ul style="list-style-type: none"> <li>UI not researcher friendly;</li> <li>Researcher permission mandatory for accessing restricted information</li> </ul>

Note: RD: Researcher Discovery; For key terminologies used, refer Appendix | Databases Introduction & Recommendation

\*Basic membership fees varies based on organization type

#UI needs to be created

# Parameters: ◎ High ○ Medium △ Low

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Vidwan is a free to use, publicly available database of Indian researchers developed & maintained by INFLIBNET

## Primary Users:

Japanese Researchers, Companies, Non-Governmental organizations, Funding Agencies, etc.

## Primary Use cases :

- Search for researchers with relevant research interest for collaboration
- Find researchers in a particular university or research institution
- Fetch **contact details**, affiliation, Qualification, publications, co-authors, researcher metric, etc. of a researcher

## Stages in User Journey



Search



Filter



Sort Profiles



Select and View  
Detailed Researcher profile

## Going to the website and selecting the type of search

- **Step 1:** Go to the URL: <https://vidwan.inflibnet.ac.in/searchc/search> through a web browser
- **Step 2:** Click on the type of search : "Free Search" or "Exact Search"

The screenshot shows the Vidwan Search Expert website. The browser address bar is highlighted with an orange box and labeled "Step 1", containing the URL <https://vidwan.inflibnet.ac.in/searchc/search>. The website header includes the Vidwan logo, navigation links (HOME, ABOUT US, DOWNLOAD, LOGIN, REGISTRATION, FEEDBACK), and a search bar. Below the search bar, the search type is set to "All". The search results page shows a list of filters on the left, a search bar with "Search Expert" entered, and a "Search" button. The search results are displayed in a grid, showing the profile of Dr Jagdish Arora, an Advisor in Information Science and Library Science, and Dr Bhabani Das, a Professor in Soil Science. The search results are sorted by Expert ID and show 14488 results.

- **Free Search:** Returns all profiles containing either word of the phrase, both words or words embedded in another word
- **Exact Search:** Returns all profiles that contain the exact phrase as typed; Returns no results if the exact phrase is not found



# Searching Researchers using Name, Organisation, Designation, Expertise, Honour Awards, Organisation Type, State, Web of science

- **Step 3:** Select the field by which you want to search researchers, by clicking on the dropdown menu
- **Step 4:** Type the keyword to be searched in the search bar
- **Step 5:** Click on the "Search" button
- This would return a list of expert profiles

The screenshot shows the Vidwan Search Expert interface. The search bar contains the text "Search Expert" and a "Search" button. A dropdown menu is open, showing options: All, Expert Name, Organisation, Designation, Expertise, Honour Awards, Organisation Type, State, and Web of Science. The "All" option is selected. The search results show a list of expert profiles, including Dr Jagdish Arora and Dr Bhabani Das. The interface also includes a "YOUR FILTERS" section and a "FILTER BY" section with various expertise categories.

## Search Criteria

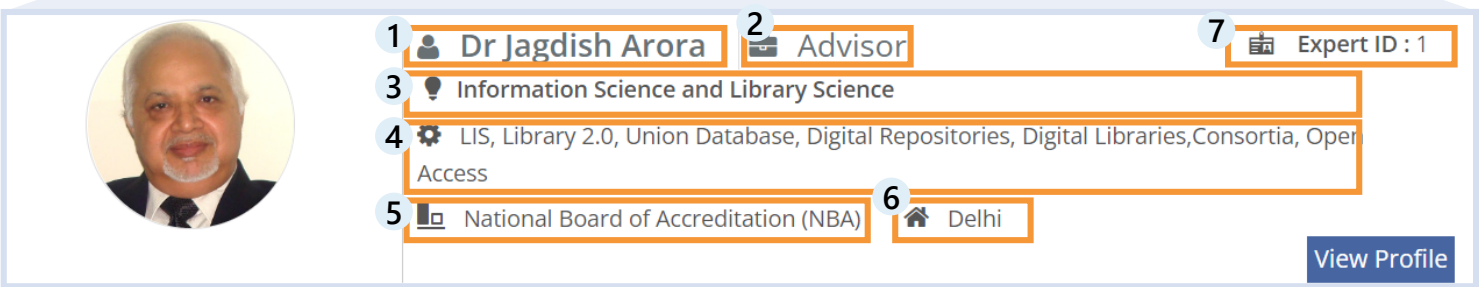
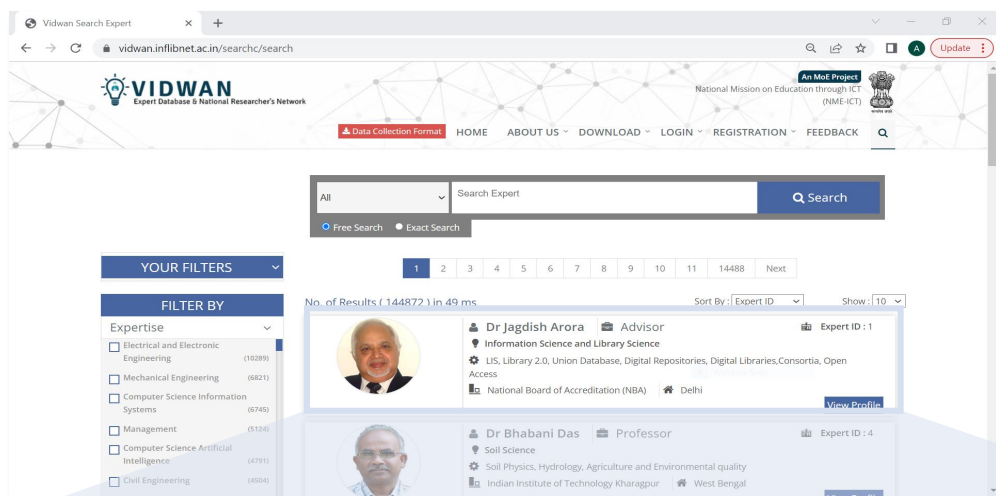
- **Expert Name:** Researcher name
- **Organisation:** Present researcher organization
- **Designation:** Present designation of researcher
- **Expertise:** Areas of expertise of the researcher
- **Honour Awards:** Researcher awards and fellowships
- **Organisation Type#:** Researcher organization type
- **State:** Researcher's state in India
- **Web of Science:** Subject of expertise as per WoS\*

URL : <https://vidwan.inflibnet.ac.in/searchc/search>

\* WoS: Web of Science; # For the types of organizations in India, refer Appendix page 74 & 75

# Researcher profile preview contains Name, Designation, Expertise, Organization, State and Expert ID of the researcher

- The search results contain a preview of the researcher profile



- 1 Expert Name:** Researcher Name
- 2 Designation:** Present designation of researcher
- 3 Expertise Category:** Subject area of expertise
- 4 Brief Expertise:** About researcher's specialization in the expertise category
- 5 Organisation:** Present researcher organization
- 6 State:** Researcher's state in India
- 7 Expert ID:** Unique Identifier similar to VIDWAN ID

# Filter Researcher profiles by Expertise, Subject Category, Organisation Type, Designation, Organisation, State

- Step 6: Filter the search results by selecting all the relevant options from the filters (Expertise, Subject Category, Organisation Type, Designation, Organisation, State)
- Step 7: Click on the "Refine Search" button to filter the search results

Step 6

The screenshot shows the VIDWAN search interface with several filter panels. Panel 1 (Expertise) lists options like Electrical and Electronic Engineering (10228), Mechanical Engineering (6766), Computer Science Information Systems (6692), Management (5097), Computer Science Artificial Intelligence (4751), and Civil Engineering (4496). Panel 2 (Subject Category) lists Engineering and Technology (56104), Social Sciences (25033), Medical and Health Sciences (14246), Physical Sciences (13726), Arts and Humanities (11734), Agricultural Sciences (9182), Chemical Sciences (6605), and Biological Sciences (5423). Panel 3 (Organisation Type) lists College (28725), State University (21187), Technical Institute (20208), Deemed University (18793), Institute of National Importance (15536), Private University (14081), Central University (10413), and Research and Development (7738). Panel 4 (Designation) lists Assistant Professor (70266), Professor (24298), Associate Professor (22639), Scientist (2066), Principal Scientist (2027), Assistant Professor (Grade-I) (1543), Assistant Professor (Grade-II) (1490), and Lecturer (1334). Panel 5 (Organisation) lists SRM Institute of Science and Technology (1628), Vellore Institute of Technology (1377), Gandhi Institute of Technology and Management (1318), Annamalai University (1182), Amity University (1108), Banaras Hindu University (1054), and Tamil Nadu Agricultural University (903). Panel 6 (State) lists Jharkhand (1163), Tamilnadu (1001), Bihar (981), Goa (768), Jammu and Kashmir (678), Chhattisgarh (668), Sikkim (633), Pondicherry (583), and Jammu & Kashmir (506). Each panel has a 'Refine Search' button at the bottom.

- 1 **Expertise:** Subject area of expertise
- 2 **Subject Category:** 8 subject areas of expertise as divided by WoS\*
- 3 **Organisation Type#:** Researcher organization type (given in next page)
- 4 **Designation:** Present designation of researcher
- 5 **Organisation:** Present researcher organization
- 6 **State:** Researcher's state in India

## Remove Filters

- **Step 8 (Optional):** After applying the filters, one can remove the filters that are not necessary by unchecking the boxes in the "YOUR FILTERS" section

The screenshot displays the Vidwan Search Expert web application. The browser address bar shows the URL [vidwan.inflibnet.ac.in/searchc/search](https://vidwan.inflibnet.ac.in/searchc/search). The page header includes the Vidwan logo, navigation links (HOME, ABOUT US, DOWNLOAD, LOGIN, REGISTRATION, FEEDBACK), and a search bar. The main content area features a search bar with 'All' selected and a 'Search Expert' button. Below the search bar, there are radio buttons for 'Free Search' and 'Exact Search'. A pagination bar shows page numbers 1 through 125, with '1' selected. The search results are displayed as 'No. of Results ( 1247 ) in 54 ms'. The results are sorted by 'Expert ID' and show 10 results per page. The first result is for Dr Parvathi Rangasamy, an Associate Professor in Mathematics at Vellalar College for Women, Erode, Tamil Nadu. The second result is for Dr Sai Sundara Krishnan G, a Professor in Mathematics. The 'YOUR FILTERS' section on the left is highlighted with an orange box and labeled 'Step 8', showing three active filters: Mathematics (1247), College (1247), and Physical Sciences (1247). Below it, the 'FILTER BY' section shows 'Expertise' with a dropdown menu and a checkbox for 'Mathematics' (1247).

# Sorting Results by Name, Designation, Expert ID, Organisation

- Search results are by default sorted in ascending order of Expert ID. To sort results by other options, follow step 9
- **Step 9:** Select the option by which you would like to sort the results by from the "Sort By" menu
- This would sort the researcher profiles as desired

The screenshot shows the Vidwan Search Expert interface. The search results are displayed in a table with columns for profile picture, name, designation, and Expert ID. The 'Sort By' dropdown menu is open, showing options: Expert ID (selected), Name, Designation, Expert ID, and Organisation. A callout box labeled 'Step 9' points to the dropdown menu. The search results are sorted by Expert ID in ascending order.

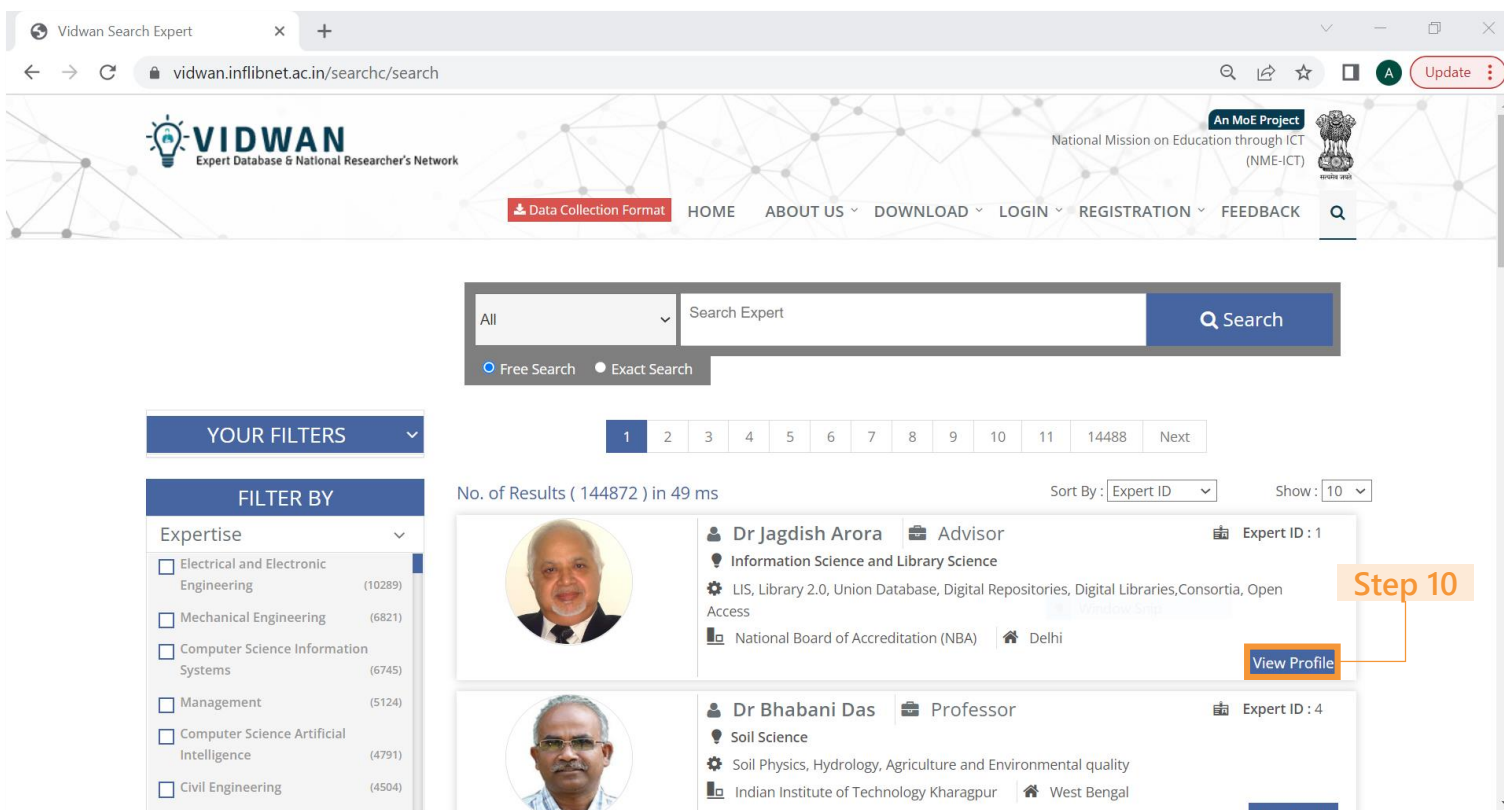
Profile Picture	Name	Designation	Expert ID
	Dr Jagdish Arora	Advisor	1
	Dr Bhabani Das	Professor	4

## Researcher Sort Criteria

- **Name:** Alphabetical order of names
- **Designation:** Alphabetical order of designation
- **Expert ID:** Ascending order of Expert ID
- **Organisation:** Alphabetical order of organisation

# Researcher Profile

- **Step 10:** Click on the "View Profile" button of the desired researcher to view detailed profile of the researcher



# 1. Researcher detailed profile

**1** Vidwan-ID : 1

**2** Vidwan Score 9.8

**3** ARTICLES 70 CONFERENCES 1 BOOKS 2 PROJECTS 8 AWARDS 5

**4** Dr Jagdish Arora  
Advisor  
National Board of Accreditation (NBA)

**5** Publications 1992 - 2021

**6** Publications

70	1	2	1	8	5	2	1
Journal Articles	In Proceedings	Book	Conference Proceedings	Projects	Awards		

**7** Citations / H-Index

59 CITATIONS | H 4 H-INDEX | 9 CROSSREF CITATIONS

**8** Altmetrics

2 | f 2 | 5 | 17

**9** Google Scholar

Citation	H Index	i-10 Index
712 Total	15 Total	23 Total
222 (2018)	9 (2018)	9 (2018)

**10** Academic

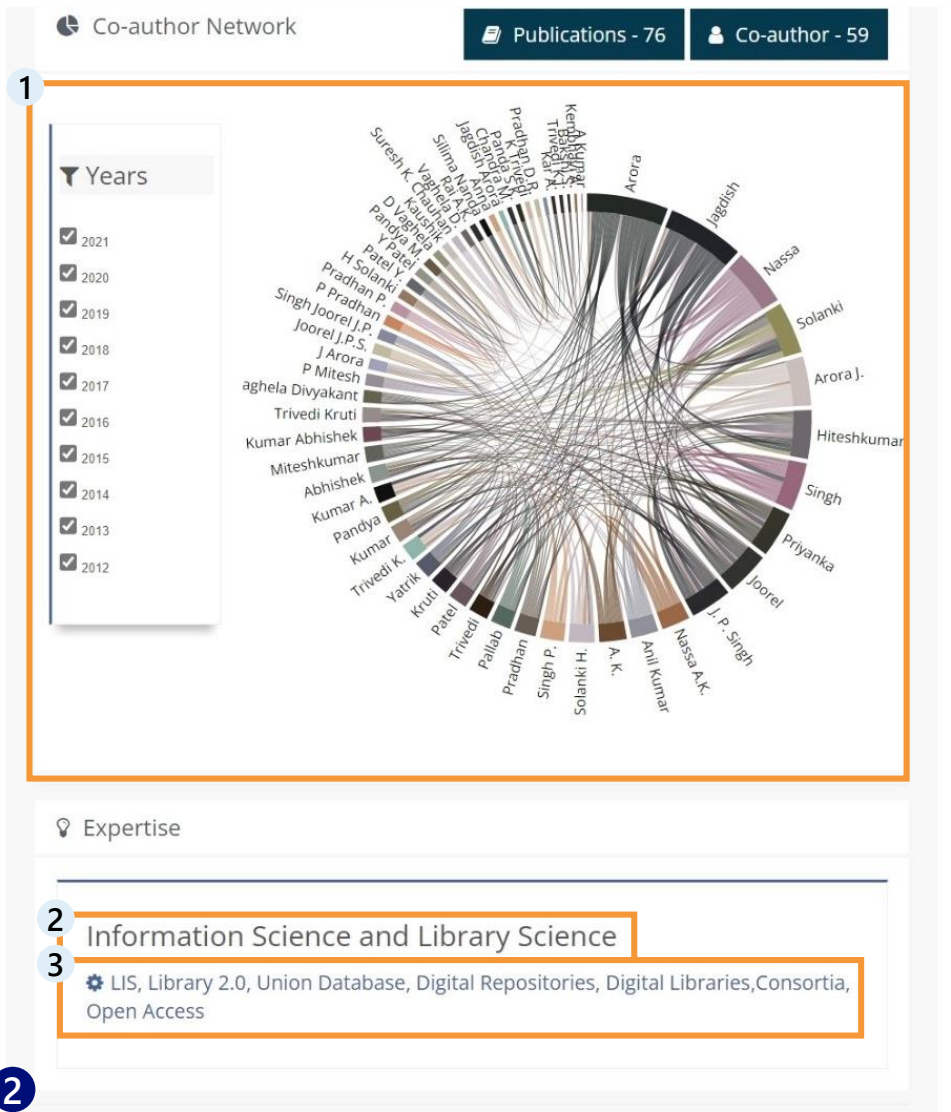
- Orcid Id: 0000-0002-4809-7361
- Scopus Id: 7102236189
- Researcher Id: DUV-8779-2022
- Google Scholar Id: gOqe69AAAAAJ

**11** Similar Experts (96)

- Amudhavalli A. Information Science and Library Science
- Tamal Kumar Guha. Information Science and Library Science
- V Kasirao. Information Science and Library Science
- Pravakar Rath. Information Science and Library Science
- Tata Rao. Information Science and Library Science

- 1 Vidwan ID:** Unique Identifier similar to Expert ID
- 2 Vidwan Score:** Based on factors like completeness of Vidwan profile, citations, honours, project funding, etc
- 3 # of articles, conferences, books, projects and awards**
- 4 Name, Current Designation and Organisation**
- 5 Year on year publications**
- 6 Key publication statistics**
- 7 Citations, h-index & Crossref citation**
- 8 Synopsis of the Altmetrics**
- 9 Citation, h & i-10 indices**
- 10 Key database identifiers**
- 11 Researchers working in similar expertise area**

## 2. Co-author network and researcher expertise



- 1 **Co-author Network:** Social networks reflecting researcher collaboration nodes in the diagram represent different researchers
- 2 **Subject of Expertise Category**
- 3 **Brief Expertise:** Researcher specialization



### 3. Personal information and experience of the researcher

### 4. Qualification, honours, awards, and membership in professional bodies

**1** Personal Information

Dr Jagdish Arora

1956 Male

National Board Of Accreditation 4th Floor, East Tower, NBCC Place, Bhisam Pitamah Marg Pragati Vihar

New Delhi, Delhi, India - 110003

**2** Experience

- 2019 - Present: Advisor, National Board of Accreditation (NBA), New Delhi
- 2007 - 2018: Director, Information and Library Network Centre, Gandhinagar
- 2003 - 2007: Librarian, Central Library, Indian Institute of Technology Delhi, South West Delhi
- 2002 - 2003: Librarian, Central Library, Indian Institute of Technology Bombay, Mumbai
- 1991 - 2002: Deputy Librarian, Central Library, Indian Institute of Technology Delhi, New Delhi
- 1983 - 1991: Library-cum-Documentation Officer, Library, National Institute of Immunology, New Delhi

**1** Qualification

- 1992: Ph.D, University of Rajasthan
- 1977: M.Lib.I.Sc., University of Delhi

**2** Honours and Awards

- 2004: ILA-Kaula Best Librarian Award, Indian Library Association
- 2001: Young Librarian Award, SATKAL, Panjab University, Chandigarh
- 1999: SIS Fellowship, School of International Service

Read More

**3** Membership In Professional Bodies

- Society for Information Science (SIS), Life Member
- Bombay Science Librarian, Life Member
- Indian Library Association (ILA), Life Member

Read More

### 3 Personal information and experience of researcher

**1** Personal Information: Name, Year of Birth, Gender, Organisation, location of the researcher

**2** Experience: Professional experience of the Researcher in reverse chronological order

### 4 Qualification, honours, awards, and membership in professional bodies

**1** Qualification: Researcher educational qualification, institution and year of study

**2** Honours and Awards

**3** Membership in Professional Bodies

3

4

# 5. Committee membership and projects by researcher

## 6. Researcher publications

**1** Membership In Committees

- 2013 Library Advisory Committee Oxford University Press Oxford Member
- 2009 Expert Review Committee of the UGC to Review the Functioning of Gujarat Vidyapeeth Member
- 2009 Expert Review Committee of the UGC to Review the Functioning of Tilak Maharashtra Vidyapeeth Member

Read More

**2** Research Projects

Evolving a Consortium for Providing Access to Electronic Resources to Colleges and Social Science Research Institutions in Selected Regions in India: Strategic Planning and Implementation Strategies

**3** Funding Agency: Sir Ratan Tata Trust (SRTT)

**4** Completed, Principal Investigator ₹ 500000 2008 - 2009

Network-enabled Digitized Collection in Engineering Science & Technology at IIT Delhi

Funding Agency: Ministry of Human Resource Development India

Completed, Principal Investigator ₹ 1000000 2002 - 2005

Developing Network-enabled Digitized Collection in Biotechnology at IIT Delhi: A Multi-pronged Proposition

Funding Agency: Department of Biotechnology Ministry of Science and Technology India

Completed, Principal Investigator ₹ 2358000 2001 - 2003

Read More

**5** Publications (76)

**1** Revisiting ranking of academic institutions: An overview

**2** Article DESIDOC Journal of Library and Information Technology, Volume 41, Year 2021, Pages 5-19

**3** Cited 3 times in Scopus

**4** 3 0 2 0

**5** 4

Ranking of institutions of higher education

Editorial DESIDOC Journal of Library and Information Technology, Volume 41, Year 2021, Pages 3-4

Cited 0 times in Scopus

1 0 1 0

Five Years of India Rankings (NIRF) and its Impact on Performance of Engineering Institutions in India. Pt. 2. Research and Professional Practices

Nassa, Anil Kumar and Arora, Jagdish and Singh, Priyanka and Joorel, J. P. Singh and Trivedi, Kruti and Solanki, Hiteshkumar and Kumar Abhishek

article DESIDOC JOURNAL OF LIBRARY & INFORMATION TECHNOLOGY, Volume 41, Year 2021, Pages 116-129

Unavailable

**6** Five Years of India Rankings and its Impact on Performance Parameters of Educational Institutions in India. Pt.1.

- 5** Committee Membership and projects by Researcher
  - 1** Committees researcher is or has been a member
  - 2** Research projects of the Researcher
  - 3** Funding Agency for the project
  - 4** Project Status, Researcher Contribution, fund allocated and project timeline
- 6** Researcher Publications
  - 1** Title of publications
  - 2** Journal of the publication
  - 3** Link to the article in Scopus
  - 4** Smart citations sourced from scite.ai
  - 5** Citations sourced from Dimensions

# Contents

- 0 Purpose of the study
- 1 Introduction to Indian Institutions
- 2 Ranking Institutions & Researchers
- 3 Database Introduction & Recommendation
- 4 Database Guide
- 5 Domain wise case study
- 6 Appendix

## Case studies included 1. Publications Statistics, 2. Institutions, 3. Researchers, and 4. Highly Cited Publications; Scopus captured 4/4 while VIDWAN captured 1/4

### About:

The case studies aim to provide insights into the trend and growth of research in a field by capturing key aspects of statistics, institutions, researchers, and highly cited publications in addition to connecting with researchers

Key elements of the Case Study	Vidwan	Scopus
<b>About</b>	Database of Indian researchers, developed for finding researchers	Database of research publications with multiple capabilities (including finding relevant publications, researchers, and institutions among others)
<b>Statistics</b> Publications per year from 2014-2022	X	✓
<b>Institutions</b> Institutions in dec. order of total relevant pubs.	X	✓
<b>Researchers</b> Top 10 researchers with highest relevant pubs.	✓ Lists researchers in order of VIDWAN ID	✓
<b>Publications</b> Highest cited publications in given research area	X	✓

Since the purpose of case studies is broader than finding and connecting with researchers and also includes learning about publications and citations, **Scopus tool is more suited for this section**



Login to Scopus via subscription access



Search the research topic through keywords



Filter results for India



View detailed information on the research topic

# Access the url using a web browser and click on "Sign in"

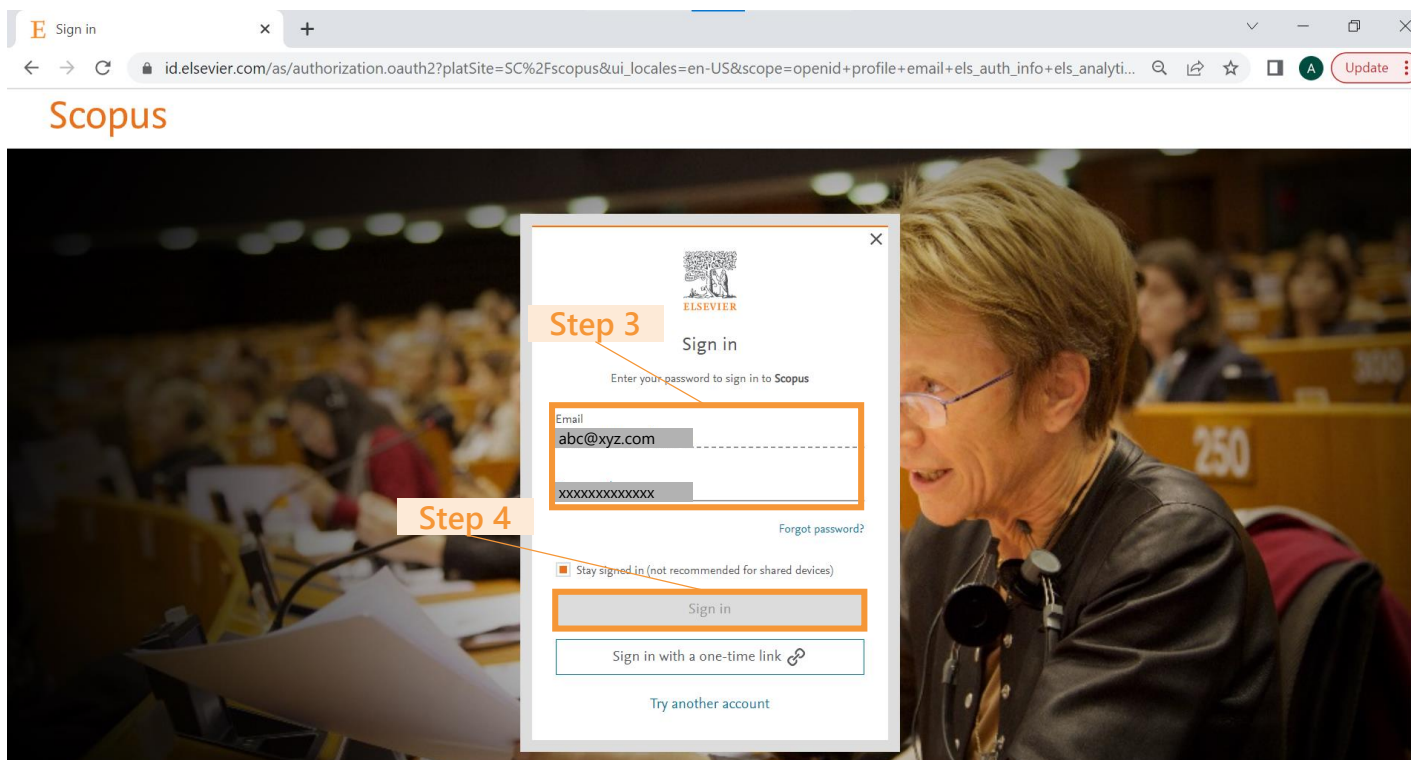
- This case study was prepared using Scopus, leading abstract and citation database (subscription access)
- **Step 1:** Go to the URL: <https://www.scopus.com/home.uri> through a web browser
- **Step 2:** Click on "Sign in" button

The screenshot shows the Scopus Preview homepage in a web browser. The address bar is highlighted with an orange box and labeled "Step 1". The "Sign in" button in the top navigation bar is also highlighted with an orange box and labeled "Step 2". The page content includes a welcome message, navigation links, and several promotional tiles for checking access, author profiles, content, and journal rankings.

- To utilize all of Scopus' features, it is essential to have a Scopus subscription
- The majority of universities and research institutions have an active subscription to Scopus database

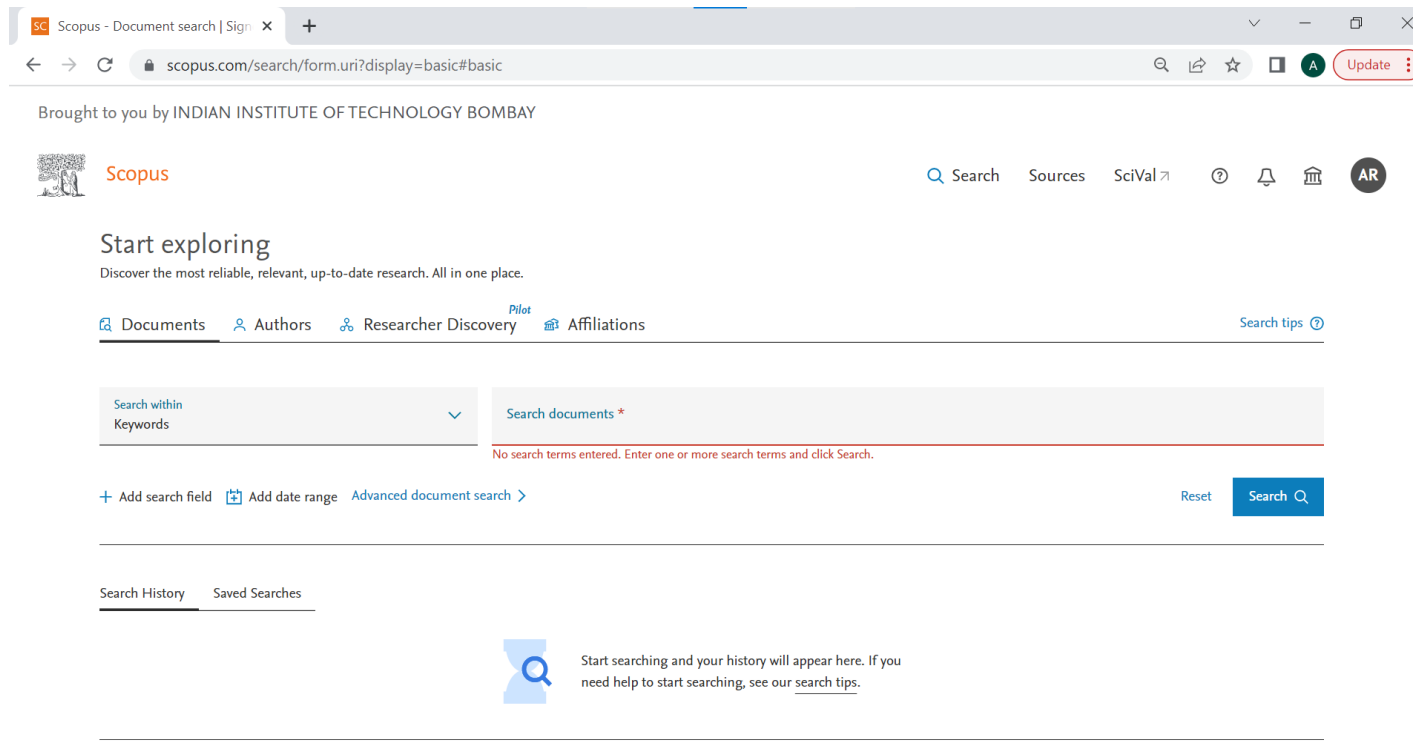
# Enter the user credentials for the subscription access to login to Scopus

- **Step 3:** Enter the login credentials in the given location
- **Step 4:** Click on "Sign in" button



# The search page appears on login

- Once the system verifies the login credentials, the search page appears as shown





## Search the terms for the topic of interest from amongst the keywords indexed from the research documents

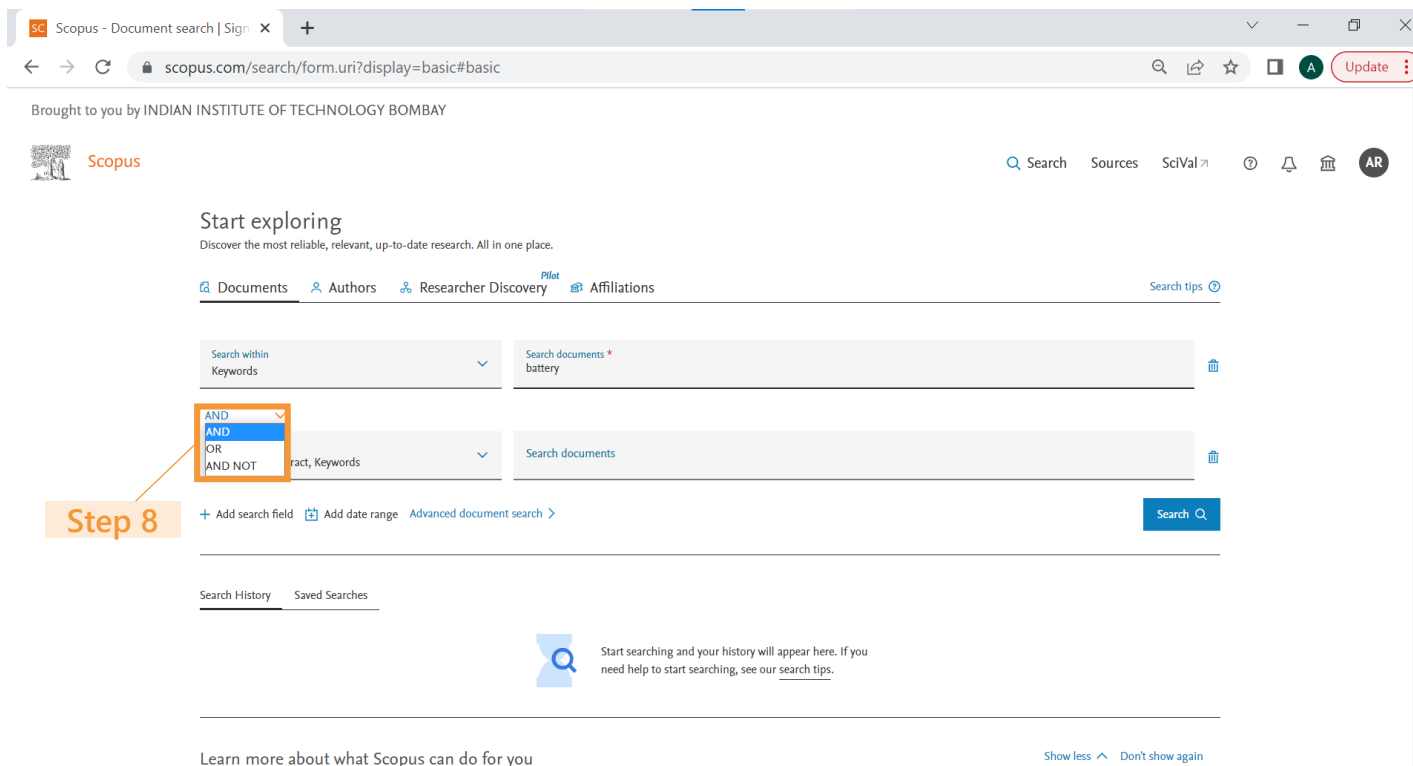
- **Step 5:** Click on "Search within" button and select "keywords" from the dropdown
- **Step 6:** Type the keywords you want to search in the "Search documents" tab
- **Step 7:** Click on the "Add search field" button to add additional keywords

The screenshot shows the Scopus search interface. A dropdown menu is open, showing search fields. The 'Keywords' option is highlighted with an orange box and labeled 'Step 5'. Below the dropdown, the 'Search within' dropdown is also highlighted with an orange box and labeled 'Step 5'. The 'Search documents' input field is highlighted with an orange box and labeled 'Step 6'. The '+ Add search field' button is highlighted with an orange box and labeled 'Step 7'. The interface includes a search bar, a search button, and a search history section.

- Finding the relevant keywords for certain research topics may require a few iterations on Scopus.
  - Start with the scientific term for the research topic
  - Edit the term by adding the most repeated keywords that appear in the search results
  - Edit the term by removing few keywords that mask up the relevant results

# Use logical operators AND, OR, AND NOT to broaden and refine the search results as required

- **Step 8:** Click on the dropdown and change the conjunction to “OR”



The screenshot shows the Scopus search interface. The browser address bar displays [scopus.com/search/form.uri?display=basic#basic](https://www.scopus.com/search/form.uri?display=basic#basic). The page header includes the Scopus logo and navigation links for Search, Sources, SciVal, and AR. The main content area features a search form with two input fields. The first field is labeled 'Search within Keywords' and contains the text 'battery'. The second field is labeled 'Search documents' and is currently empty. A dropdown menu is open over the second field, showing the options: AND, OR, and AND NOT. The 'OR' option is highlighted in blue. An orange callout box labeled 'Step 8' points to this dropdown menu. Below the search fields, there are links for 'Add search field', 'Add date range', and 'Advanced document search'. At the bottom, there is a 'Search' button and a 'Search History' section.

## Meaning of different logical operators:

- AND operator requires all search keywords to be present in the search results
- OR operator returns results that contain any of the search keywords
- AND NOT operator is used to exclude specific terms from search results

# Add all the relevant search terms and click on Search to get all the associated research documents

- **Step 9:** Select keywords under the "Search within" tab and type the keyword in the "Search documents" tab
- **Step 10:** Click on the "Search" button
- Similarly add any other keyword, if applicable using the "Add search field" option

The screenshot displays the Scopus search page. At the top, there's a navigation bar with 'Login', 'Search', 'Filter', and 'View' buttons. Below this, the page title is 'Scopus - Document search | Sign out'. The main content area features the Scopus logo and a navigation menu with 'Search', 'Sources', 'SciVal', and 'AR'. The 'Start exploring' section includes a sub-header 'Discover the most reliable, relevant, up-to-date research. All in one place.' and a menu with 'Documents', 'Authors', 'Researcher Discovery', and 'Affiliations'. The search interface consists of two search fields. The first field has 'Search within Keywords' and 'Search documents \* battery'. The second field has 'Search within Keywords' and 'Search documents batteries'. An orange box labeled 'Step 9' points to the second search field. Below the search fields, there are options to '+ Add search field', '+ Add date range', and 'Advanced document search >'. A blue 'Search' button with a magnifying glass icon is highlighted with an orange box labeled 'Step 10'. At the bottom, there are links for 'Search History', 'Saved Searches', and 'Combine queries >'. The browser address bar shows 'scopus.com/search/form.uri?display=basic#basic'.

# Filter documents from India by checking the checkbox associated with India and clicking Limit to

- The search result yields research papers from across all countries. For India specific results, follow the below steps:
- **Step 11:** Click on the checkbox near India under the Country/territory dropdown
- **Step 12:** Click on the "Limit to" button

The screenshot shows a Scopus search results page for the query 'battery'. The left sidebar contains filters for 'Country/territory' and 'Source type'. The 'Country/territory' filter is expanded, showing a list of countries with checkboxes. The 'India' checkbox is highlighted with an orange box, and an orange callout labeled 'Step 11' points to it. Below the list, the 'Limit to' button is highlighted with an orange box, and an orange callout labeled 'Step 12' points to it. The main content area displays a list of search results, including titles, authors, years, journals, and citation counts.

Country/Territory	Count
Zhejiang University	(2,635)
China	(104,051)
United States	(51,089)
South Korea	(16,908)
<b>India</b>	<b>(16,677)</b>
Japan	(16,356)
Germany	(15,097)
United Kingdom	(10,345)
Australia	(8,423)
Canada	(8,296)
France	(8,199)

Source type	Count
Journal article	(10,000)
Book	(1,000)
Conference paper	(1,000)
Thesis	(1,000)
Review	(1,000)
Patent	(1,000)
Other	(1,000)

Result ID	Title	Author(s)	Year	Journal	Citation Count
13	High-performance lithium battery anodes using silicon nanowires	Chan, C.K., Peng, H., Liu, G., (...), Huggins, R.A., Cui, Y.	2008	Nature Nanotechnology 3(1), pp. 31-35	5599
14	Nanomaterials for rechargeable lithium batteries	Bruce, P.G., Scrosati, B., Tarascon, J.-M.	2008	Angewandte Chemie - International Edition 47(16), pp. 2930-2946	5298
15	Challenges in the development of advanced Li-ion batteries: A review	Etacheri, V., Marom, R., Elazari, R., Salitra, G., Aurbach, D.	2011	Energy and Environmental Science 4(9), pp. 3243-3262	5135
16	Lithium batteries and cathode materials	Whittingham, M.S.	2004	Chemical Reviews 104(10), pp. 4271-4301	5083
17	Nonaqueous liquid electrolytes for lithium-based rechargeable batteries	Xu, K.	2004	Chemical Reviews 104(10), pp. 4303-4417	5064

## The search results contain the document title, author names, year of publication, source, citations and the link to access the article

- This yields all the research documents available on Scopus from India on battery research sorted on the basis of the number of citations
- However, the list of publications can also lead to inconsistent results due to uncontrolled and different Scopus indexing of keywords

Scopus - Document search result

scopus.com/results/results.uri?sort=cp-f&src=s&st1=battery&st2=batteries&nlo=&nlr=&nls=&sid=484e20cc917b73858d8c35c091b61390...

16,677 document results

(KEY (battery) OR KEY (batteries)) AND (LIMIT-TO (AFFILCOUNTRY, "India"))

Edit Save Set alert

Search within results...

Refine results

Limit to Exclude

Open Access

Year

Author name

Subject area

Document type

Article (8,565)

Conference Paper (7,009)

Review (670)

Book Chapter (375)

Documents Secondary documents Patents View Mendeley Data (11569)

Analyze search results Show all abstracts Sort on: Cited by (highest)

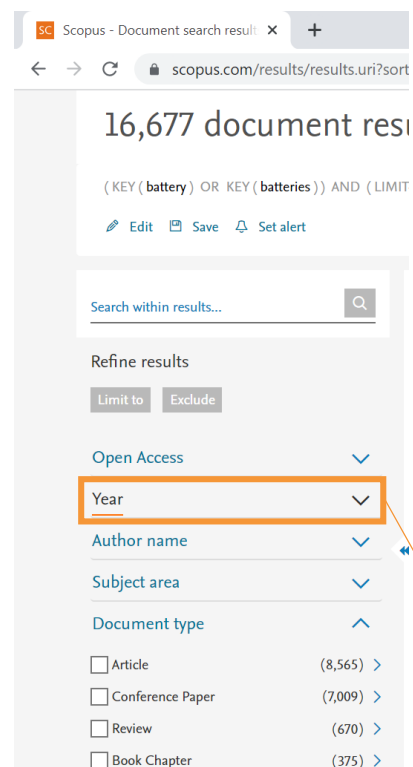
	Document title	Authors	Year	Source	Cited by
<input type="checkbox"/> 1	Electrochemically active polymers for rechargeable batteries	Novák, P., Müller, K., Santhanam, K.S.V., Haas, O.	1997	Chemical Reviews 97(1), pp. 207-281	1510
	View at Publisher Related documents				
<input type="checkbox"/> 2	Hierarchically porous carbon derived from polymers and biomass: Effect of interconnected pores on energy applications	Dutta, S., Bhaumik, A., Wu, K.C.-W.	2014	Energy and Environmental Science 7(11), pp. 3574-3592	1110
	View abstract View at Publisher Related documents				
<input type="checkbox"/> 3	Review on oel polvmer electrolytes for lithium batteries	Stphan. A.M.	2006	European Polymer Journal	1046

- The results contains the following information on research documents:

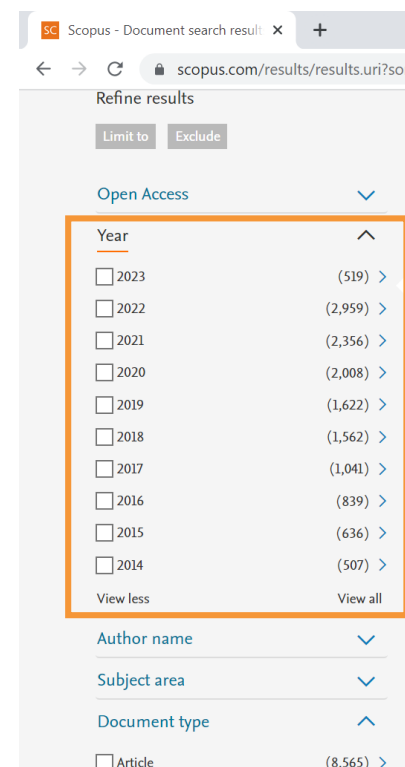
- Document title
- Author names
- Year of publication
- Source
- Total citations
- Link to access the article

## To obtain the number of publications per year, click on the dropdown menu located next to the "Year" field

- **Step 13:** To get the publications count by year, click on the down arrow besides Year

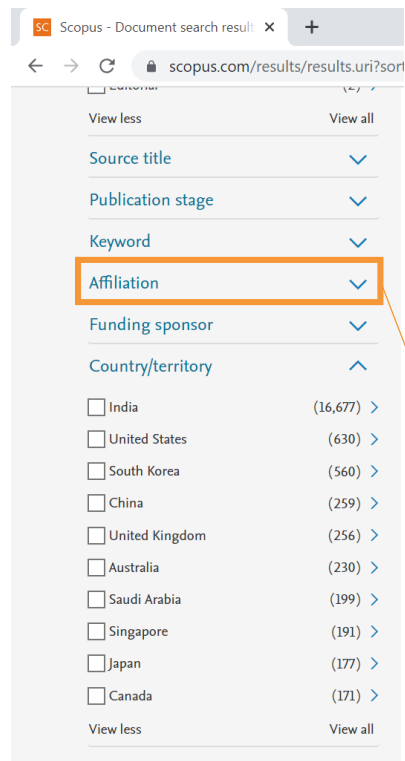


Step 13

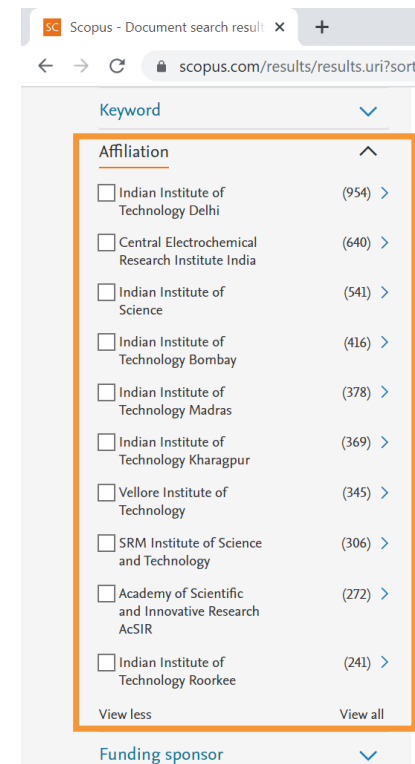


## To retrieve the leading research institutions for the given topic, click on the dropdown menu located next to the "Affiliation" field

- **Step 14:** To fetch the top institutions for research in the given topic, click on the down arrow besides Affiliation
- The research institutions are sorted on the basis of the number of research papers published in the given topic

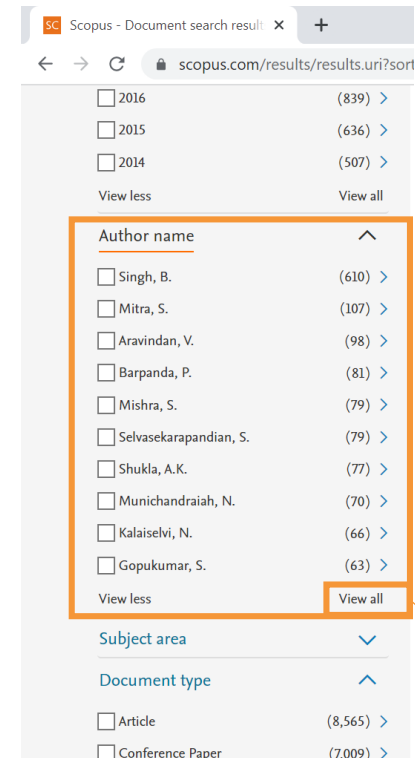
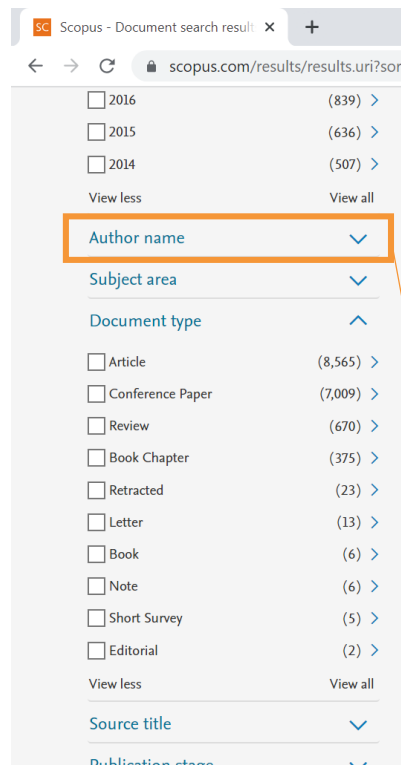


Step 14



## To fetch the top researchers for research in the given topic, click on the down arrow located next to the "Author name" field

- **Step 15:** To fetch the top researchers for research in the given topic, click on the down arrow besides Author name
- **Step 16:** Click on the "View all" button to view the full list of researchers
- The researchers are sorted on the basis of the number of research papers published in the given topic





# To view detailed Researcher description, click on the arrow (>) besides the author name

- **Step 17:** To view detailed Researcher description, click on the arrow (>) besides the author name

The screenshot shows a Scopus search results page. The browser address bar displays the URL: [scopus.com/results/results.uri?sort=cp-f&src=s&st1=battery&st2=batteries&nlo=&nlr=&nls=&sid=484e20cc917b73858d8c35c091b61390...](https://scopus.com/results/results.uri?sort=cp-f&src=s&st1=battery&st2=batteries&nlo=&nlr=&nls=&sid=484e20cc917b73858d8c35c091b61390...). The page title is "Filter by author name". A callout box labeled "Step 17" points to the right-pointing arrow (>) next to the author name "Singh, B." in the first row of the list. The list contains 48 authors, each with a checkbox and a count in parentheses. Below the list, there are buttons for "Limit to" and "Exclude". At the bottom of the page, there is a "Document type" filter section with "Article" (8,565) and "Conference Paper" (7,009) options, and a "View abstract" dropdown menu.

Author Name	Count
<input type="checkbox"/> Singh, B.	(610) >
<input type="checkbox"/> Mitra, S.	(107) >
<input type="checkbox"/> Aravindan, V.	(98) >
<input type="checkbox"/> Barpanda, P.	(81) >
<input type="checkbox"/> Mishra, S.	(79) >
<input type="checkbox"/> Selvasekarapandian, S.	(79) >
<input type="checkbox"/> Shukla, A.K.	(77) >
<input type="checkbox"/> Munichandraiah, N.	(70) >
<input type="checkbox"/> Kalaisevi, N.	(66) >
<input type="checkbox"/> Gopukumar, S.	(63) >
<input type="checkbox"/> Panigrahi, B.K.	(63) >
<input type="checkbox"/> Martha, S.K.	(60) >
<input type="checkbox"/> Sivakumar, M.	(59) >
<input type="checkbox"/> Subadevi, R.	(59) >
<input type="checkbox"/> Bhattacharyya, A.J.	(54) >
<input type="checkbox"/> Stephan, A.M.	(49) >
<input type="checkbox"/> Sharma, C.S.	(48) >
<input type="checkbox"/> Mahanty, S.	(33) >
<input type="checkbox"/> Varadaraju, U.V.	(33) >
<input type="checkbox"/> Channegowda, J.	(32) >
<input type="checkbox"/> Kale, B.B.	(32) >
<input type="checkbox"/> Nagaraju, G.	(32) >
<input type="checkbox"/> Narayanan, V.	(32) >
<input type="checkbox"/> Thirunakaran, R.	(32) >
<input type="checkbox"/> Verma, A.K.	(32) >
<input type="checkbox"/> Hussain, I.	(31) >
<input type="checkbox"/> Singh, M.	(31) >
<input type="checkbox"/> Sivashanmugam, A.	(31) >
<input type="checkbox"/> Chowdari, B.V.R.	(30) >
<input type="checkbox"/> Garg, A.	(29) >
<input type="checkbox"/> Kurungot, S.	(29) >
<input type="checkbox"/> Mukhopadhyay, A.	(29) >
<input type="checkbox"/> Ahuja, R.	(28) >
<input type="checkbox"/> Kundu, M.	(28) >
<input type="checkbox"/> Basu, R.N.	(24) >
<input type="checkbox"/> Basu, S.	(24) >
<input type="checkbox"/> Gupta, A.	(24) >
<input type="checkbox"/> Nair, S.	(24) >
<input type="checkbox"/> Niazi, K.R.	(24) >
<input type="checkbox"/> Rai, A.K.	(24) >
<input type="checkbox"/> Ramaprabhu, S.	(24) >
<input type="checkbox"/> Sharma, Y.	(24) >
<input type="checkbox"/> Chishti, F.	(23) >
<input type="checkbox"/> Hussain, O.M.	(23) >
<input type="checkbox"/> Kumar, C.	(23) >
<input type="checkbox"/> Nalini, B.	(23) >
<input type="checkbox"/> Paruthimal Kalaignan, G.	(23) >
<input type="checkbox"/> Rajendran, S.	(23) >
<input type="checkbox"/> Sil, A.	(23) >
<input type="checkbox"/> Vediappan, K.	(23) >
<input type="checkbox"/> Vijayamohanam, K.	(23) >
<input type="checkbox"/> Srivastava, M.	(21) >
<input type="checkbox"/> Abhilash, K.P.	(20) >
<input type="checkbox"/> Basu, S.	(20) >
<input type="checkbox"/> Das, D.	(20) >
<input type="checkbox"/> Ghosh, D.	(20) >
<input type="checkbox"/> Goel, P.K.	(20) >
<input type="checkbox"/> Jayalakshmi, N.S.	(20) >
<input type="checkbox"/> Kumar, A.	(20) >
<input type="checkbox"/> Kumar, N.	(20) >
<input type="checkbox"/> Madhavi, S.	(20) >
<input type="checkbox"/> Nahm, K.S.	(20) >
<input type="checkbox"/> Nair, S.V.	(20) >
<input type="checkbox"/> Panwar, A.K.	(20) >
<input type="checkbox"/> Raja, M.	(20) >
<input type="checkbox"/> Shelke, M.V.	(20) >
<input type="checkbox"/> Verma, A.	(20) >
<input type="checkbox"/> Arya, S.R.	(19) >

# Click on the “View author details” link to view the researcher profile

- **Step 18:** Click on the “View Singh, B’s author details”

The screenshot shows a Scopus search result page. A filter box titled "Filter by author name" is open, displaying a link "View Singh, B.'s author details" which is highlighted with an orange box and labeled "Step 18". Below the link, it shows the author's affiliation: "Indian Institute of Technology Delhi, New Delhi, India" and states "610 documents published by Singh, B. matches your query (Showing first 20 results)". A table of documents is displayed with columns for Title, Authors, Year, and Source.

Title	Authors	Year	Source
Isolated wind-hydro hybrid system using cage generators and battery storage	Goel, P.K., Singh, B., Murthy, S.S., Kishore, N.	2011	IEEE Transactions on Industrial Electronics
Implementation of a Grid-Integrated PV-Battery System for Residential and Electrical Vehicle Applications	Saxena, N., Hussain, I., Singh, B., Vyas, A.L.	2018	IEEE Transactions on Industrial Electronics
Single Sensor-Based MPPT of Partially Shaded PV System for Battery Charging by Using Cauchy and Gaussian Sine Cosine Optimization	Kumar, N., Hussain, I., Singh, B., Panigrahi, B.K.	2017	IEEE Transactions on Energy Conversion
DFIG-based wind power conversion with grid power leveling for reduced gusts	Ganti, V.C., Singh, B., Aggarwal, S.K., Kandpal, T.C.	2012	IEEE Transactions on Sustainable Energy

## The Researcher profile contains data on affiliation, ORCID ID, Citations, h index, Research topics and papers, Co-Authors and the awarded grants

- This opens the Researcher profile in a separate tab
- The Research papers published by the researcher can be checked to confirm whether the research interests of the researchers aligns with our search topic

The screenshot shows a Scopus researcher profile for Bhim Singh. The profile includes the following information:

- Author Name:** Singh, Bhim
- Affiliation:** Indian Institute of Technology Delhi, New Delhi, India
- ORCID ID:** <https://orcid.org/0000-0003-4759-7484>
- Citations:** 37302 (Citations by 20,861 documents)
- Documents:** 2634
- h-index:** 79

Below the profile information, there are sections for "Document & citation trends" (with a chart) and "Most contributed Topics 2017-2021". The topics listed are:

- Power Quality; Grid; Photovoltaic System (197 documents)
- Maximum Power Point Trackers; Powerpoint; Solar Cell (161 documents)
- Phase-Locked Loop; Inverters; Grid (139 documents)

At the bottom of the page, there is a summary bar showing: Documents, 633 Co-Authors, 97 Topics, and 0 Awarded Grants.

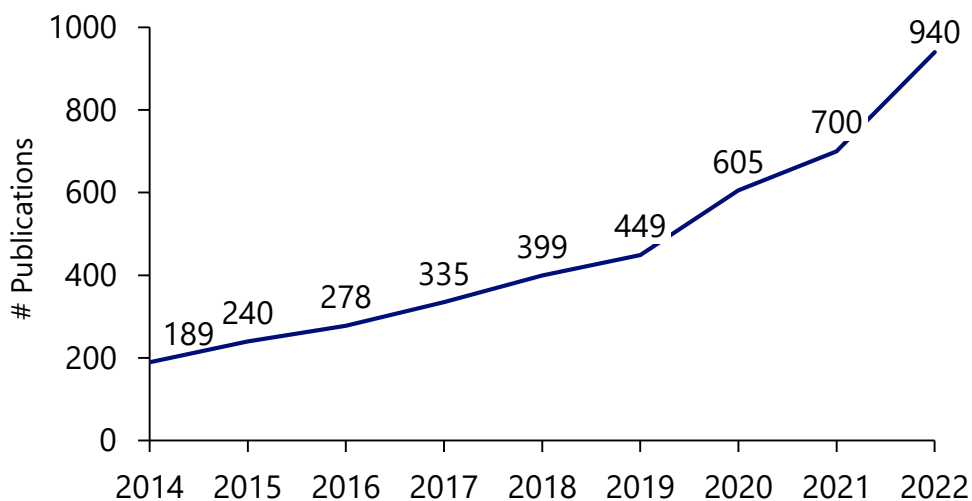
- The Researcher profile contains the following details:

- Researcher Name
- Affiliation
- ORCID ID
- Total Citations
- h-index
- Research topics
- Research papers published
- Co-Authors
- Grants Awarded

## Trends in publications focused on hydrogen, key institutions for Hydrogen research, etc can be obtained by searching relevant keywords in Scopus

- The keywords "hydrogen production" & "hydrogen evolution" were shortlisted after searching the topic of interest ("hydrogen") in the Scopus database and selecting all keywords related to Green energy

### Key Statistics



Hydrogen is crucial to decarbonize sectors of economy that are hard to electrify. Therefore Govt. as well as private organizations are increasingly invested in Hydrogen research in line with the India's net zero goals for 2070

### Key Institutions\*

- 1 Academy of Scientific and Innovative Research (AcSIR)
- 2 Council of Scientific and Industrial Research, India
- 3 Central Electrochemical Research Institute, India
- 4 Indian Institute of Technology, Kharagpur
- 5 Indian Institute of Technology, Delhi
- 6 Bhabha Atomic Research Centre
- 7 SRM Institute of Science and Technology
- 8 Indian Institute of Technology Madras
- 9 Anna University
- 10 Indian Institute of Science

## Researchers with research focus in hydrogen production, water splitting & fuel cells are spread across India in various Institutions

### Researchers with Highest publications\*



**Venkata Mohan, Srinivasula Reddy**

*CSIR-Indian Institute of Chemical Technology*

Bioenergy; Regenerative Fuel Cells, Biohydrogen  
Fermentation; Hydrogen Production



**Pal, Ujjwal**

*Academy of Scientific and Innovative Research*

CdS; Hydrogen Production; Photocatalyst  
Hydrogen Generation; Water Splitting; TiO<sub>2</sub>



**Das, Debabrata**

*Indian Institute of Technology, Kharagpur*

Bioenergy; Regenerative Fuel Cells, Bioelectricity  
Biohydrogen; Fermentation; Hydrogen Production



**Neppolian, Bernaurdshaw**

*SRM Institute of Science and Technology*

CdS; Hydrogen Production; Photocatalyst  
Hydrogen Production; Photocatalysts; TiO<sub>2</sub>



**Shankar, Muthukonda Venkatakrishnan**

*Yogi Vemana University, Kadapa*

CdS; Hydrogen Production; Photocatalyst  
Hydrogen Production; Photocatalysts; TiO<sub>2</sub>



**Kale, Bharat Bhanudas**

*Centre for Materials for Electronics Technology*

CdS; Hydrogen Production; Photocatalyst  
Oxynitrides; Water Splitting; Photocatalysts



**Kundu, Subrata**

*Central Electrochemical Research Institute*

Catalyst; Cobalt Phosphide; Water Splitting



**Parida, Kulamani M.**

*Siksha O Anusandhan*

CdS; Hydrogen Production; Photocatalyst  
Catalyst; Cobalt Phosphide; Water Splitting



**Rao, C. N.R.**

*Jawaharlal Nehru Centre for Advanced Scientific  
Research*

Catalyst; Cobalt Phosphide; Water Splitting  
CdS; Hydrogen Production; Photocatalyst



**Sathish, M.**

*Central Electrochemical Research Institute*

CdS; Hydrogen Production; Photocatalyst  
Hydrogen Production; Photocatalysts; TiO<sub>2</sub>

## Key research publications of interest can be obtained on overall, researcher and university level

### 1 Hydrogen production by biological processes: A survey of literature



Das, D., Veziroğlu, T.N.



*International Journal of Hydrogen Energy* 26(1), pp. 13-28



2001



1723

### 2 Recent Trends and Perspectives in Electrochemical Water Splitting with an Emphasis on Sulfide, Selenide, and Phosphide Catalysts of Fe, Co, and Ni: A Review



Anantharaj, S., Ede, S.R., Sakthikumar, K., Karthick, K., Mishra, S., Kundu, S., T.N



*ACS Catalysis* 6(12), pp. 8069-8097



2016



1585

### 3 Glucose oxidase - An overview



Bankar, S.B., Bule, M.V., Singhal, R.S., Ananthanarayan, L.



*Biotechnology Advances* 27(4), pp. 489-501



2009



841

### 4 Precision and correctness in the evaluation of electrocatalytic water splitting: Revisiting activity parameters with a critical assessment



Anantharaj, S., Ede, S.R., Karthick, K., Sam Sankar S., Sangeetha K., Karthik, P.E., Kundu, S.



*Energy and Environmental Science* 11(4), pp. 744-771



2018

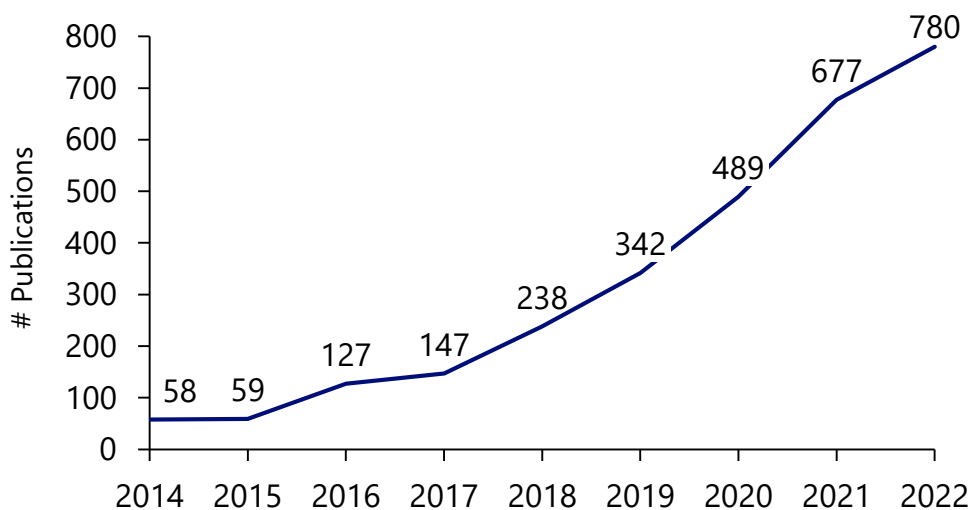


785

## Research on drones has been gaining focus as evident from the no. of research papers published every year. IISc is the top institution for drone research in India

- The keywords "unmanned aerial vehicle", "drone", "uav" were shortlisted after searching the topic of interest ("drone") in the Scopus database and selecting all keywords related to drone

### Key Statistics



India is investing in drone technology, focusing on applications in agriculture, surveillance, disaster management, & logistics.. IITs, IISc, DRDO & also private companies like Tata Advanced Systems, Mahindra Aerospace, Aero360 are pursuing drone technology

### Key Institutions\*

- 1 Indian Institute of Science
- 2 Indian Institute of Technology, Kanpur
- 3 Thapar Institute of Engineering & Technology
- 4 Vellore Institute of Technology
- 5 Indian Institute of Technology, Kharagpur
- 6 Anna University
- 7 Indian Institute of Technology, Bombay
- 8 Defence Research and Development Organisation, India
- 9 University of Petroleum and Energy Studies
- 10 Indian Institute of Technology, Roorkee

Key researchers in drone research are spread across IISc, IITs, IISER, BITS Pilani, TCS Research, Ramswaroop Memorial University, Nirma University, etc.

### Researchers with Highest publications\*



**Ghose, Debasish**

*Indian Institute of Science*

Navigation; Mobile Robots; Artificial Potential Field Path Planning; UAV; Curvature Continuity



**Kothari, Mangal**

*Indian Institute of Technology, Kanpur*

Controller; Altitude Control; Vertical Takeoff & Landing Ducted Fans; UAV; Transition Flight



**Kumar, N.**

*Shri Ramswaroop Memorial University*

Drone; UAVs; Base Stations



**Singh, Dharmendra**

*Graphic Era Deemed to be University*

RADARSAT; Crops; Soil Moisture Crops; Leaf Area Index; Hyperspectral Data



**Sujit, P. B.**

*IISER, Bhopal*

Landing; Autonomous; Pose Estimation Path Following; UAV; Fixed Wings



**Ghosh, Ajoy Kanti**

*Indian Institute of Technology, Kanpur*

Ducted Fans; UAV; Transition Flight Soaring; Helicopter; UAV



**Ratnoo, Ashwini**

*Indian Institute of Science*

Guidance Law; Angle; Missile Control Path Following; UAV; Fixed Wings



**Das, Kaushik**

*TCS, Research*

Controller; Altitude Control; Vertical Takeoff & Landing Robot; Homography; Mobile Robots



**Tanwar, Sudeep**

*Nirma University, Institute of Technology*

Drone; UAVs; Base Stations



**Chamola, Vinay**


*Birla Institute of Technology & Science, Pilani*


Object Detection; Deep Learning; IOU Drone; UAVs; Base Stations




## The most cited papers on drone research focus on application of drone systems in COVID-19 & precision agriculture, algorithms for path following, etc.

### 1 A Comprehensive Review of the COVID-19 Pandemic and the Role of IoT, Drones, AI, Blockchain, and 5G in Managing its Impact


 Chamola, V., Hassija, V., Gupta, V., Guizani, M.

 *IEEE Access* 8,9086010, pp. 90225-90265


 2020


 597

### 2 Review on Application of Drone Systems in Precision Agriculture


 Mogili, U.R., Deepak, B.B.V.L.


 *Procedia Computer Science* 133, pp. 502-509


 2018

 337

### 3 Unmanned aerial vehicle path following: A survey and analysis of algorithms for fixed-wing unmanned aerial vehicles


 Sujit, P.B., Saripalli, S., Sousa, J.B.

 *IEEE Control Systems* 34(1),6712082, pp. 42-59


 2014

 327

### 4 UAV-Assisted Heterogeneous Networks for Capacity Enhancement

 Sharma, V., Bennis, M., Kumar, R.

 *IEEE Communications Letters* 20(6),7451189, pp. 1207-1210

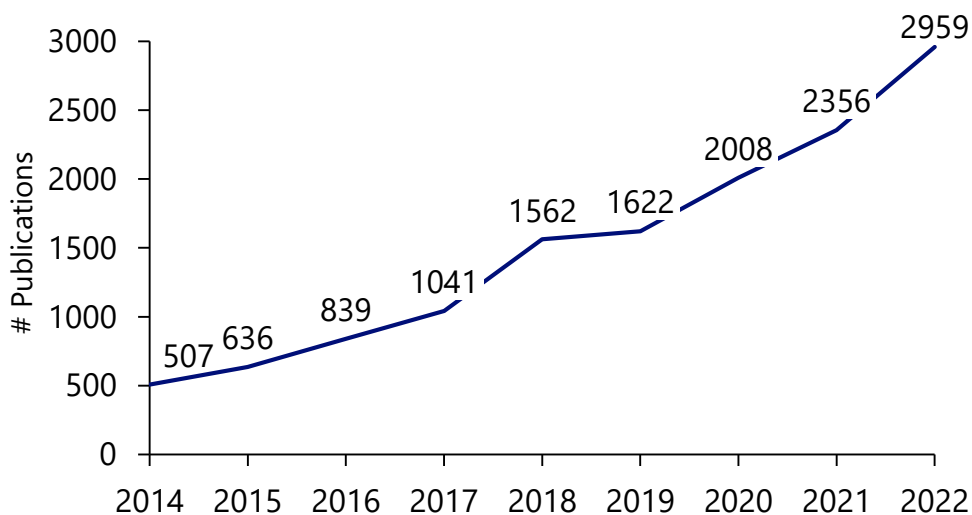
 2016

 245

## Battery research has grown to ~5x of its size in 2014 with the IITs, IISc, Central Electrochemical Research Institute leading in terms of no. of papers published

- The keywords "batteries", "battery" were shortlisted after searching the topic of interest ("battery") in the Scopus database and using keywords that would fit all the top keyword results

### Key Statistics



Battery research in India has been gaining momentum in recent years, as the country aims to become a global leader in renewable energy and electric mobility. Some focus areas include Li ion batteries, alternative battery chemistries, battery recycling

### Key Institutions\*

- 1 Indian Institute of Technology, Delhi
- 2 Central Electrochemical Research Institute
- 3 Indian Institute of Science
- 4 Indian Institute of Technology Bombay
- 5 Indian Institute of Technology, Madras
- 6 Indian Institute of Technology, Kharagpur
- 7 Vellore Institute of Technology
- 8 SRM Institute of Science and Technology
- 9 Academy of Scientific and Innovative Research (AcSIR)
- 10 Indian Institute of Technology, Roorkee

## Researchers with most no. of relevant papers in battery technology are spread across IITs, IISc, Central Electrochemical Research Institute, IISER, etc.

### Researchers with Highest publications\*



**Singh, Bhim**

*Indian Institute of Technology, Delhi*

Power Quality; Grid; Photovoltaic System  
Electric Vehicle; Vehicle-To-Grid; Charging



**Shukla, Ashutosh Kumar**

*Indian Institute of Science*

Electrode; Cobaltous Sulfide; Electrode Materials  
Flow Batteries; Electrode; Vanadium



**Mitra, Sagar**

*Indian Institute of Technology, Bombay*

Sodium-ion Batteries; Electrode; Ion Storage  
Lithium Sulfur Batteries; Polysulfides; Electrode



**Munichandraiah, Nookala**

*Indian Institute of Science*

Electrode; Cobaltous Sulfide; Electrode Materials  
Sodium-ion Batteries; Electrode; Ion Storage



**Aravindan, Vanchiappan**

*IISER, Tirupati*

Sodium-ion Batteries; Electrode; Ion Storage  
Capacitors; Electrode; Intercalation



**Kalaiselvi, Nallathamby**

*Central Electrochemical Research Institute, India*

Sodium-ion Batteries; Electrode; Ion Storage  
Lithium Sulfur Batteries; Polysulfides; Electrode



**Mishra, Sukumar**

*Indian Institute of Technology, Delhi*

Power Quality; Grid; Photovoltaic System  
Electric Vehicle; Vehicle-To-Grid; Charging



**Gopukumar, Sukumaran**

*Central Electrochemical Research Institute, India*

Sodium-ion Batteries; Electrode; Ion Storage  
Lithium Battery; Carbon; Electrode



**Selvasekarapandian, Subramanian**

*Materials Research Center, Coimbatore*

Lithium Perchlorates; Macrogol; Ion Currents  
Nanocomposite; Barium Titanates; Dielectric Losses





**Panigrahi, Bijaya Ketan**

*Indian Institute of Technology, Delhi*

Maximum Power Point Trackers; Powerpoint; Solar Cell  
Electric Vehicle; Vehicle-To-Grid; Charging



## The most cited papers focus on Lithium ion battery research, innovative materials for electrolytes and electrodes, etc.

### 1 Electrochemically active polymers for rechargeable batteries

 Novák, P., Müller, K., Santhanam, K.S.V., Haas, O.  
 *Chemical Reviews* 97(1), pp. 207-281

 1997  
 1510

### 2 Hierarchically porous carbon derived from polymers and biomass: Effect of interconnected pores on energy applications

 Dutta, S., Bhaumik, A., Wu, K.C.-W.  
 *Energy and Environmental Science* 7(11), pp. 3574-3592



 2014  
 1110

### 3 Review on gel polymer electrolytes for lithium batteries

 Stephan, A.M.  
 *European Polymer Journal* 42(1), pp. 21-420

 2006  
 1046

### 4 Safety mechanisms in lithium-ion batteries

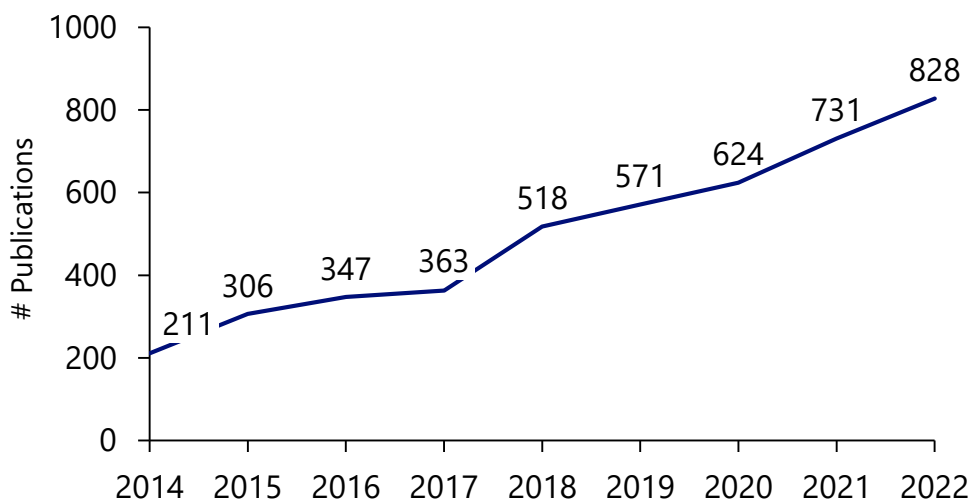
 Balakrishnan, P.G., Ramesh, R., Prem Kumar, T.  
 *Journal of Power Sources* 155(2), pp. 401-414

 2006  
 926

## Brainwave research has focused on epilepsy although other areas are also emerging. AIIMS, Jadavpur University, PGIMER, etc. are the leading institutions

- The keywords "electroencephalogram", "brainwave", "brain wave", "eeg", "electroencephalography", "brain computer interface" were shortlisted after searching topic of interest ("brainwave") in the Scopus database and selecting all top keywords related to brainwave
- The keywords "epilepsy", "seizure" was excluded from the search results to be relevant to the search topic as epilepsy and seizure was the most common research topic using the above keywords

### Key Statistics



Brainwave research in India is a growing field that encompasses various aspects of neuroscience, cognitive psychology, and artificial intelligence. Recently, brainwave research in India has been extended to clinical applications, like studying effects of meditation, developing new therapies for neurological disorders

### Key Institutions\*

- 1 All India Institute of Medical Sciences, New Delhi
- 2 National Institute of Mental Health and Neuro Sciences
- 3 Jadavpur University
- 4 Indian Institute of Technology, Kharagpur
- 5 Indian Institute of Science
- 6 Postgraduate Institute of Medical Education & Research
- 7 Indian Institute of Technology Madras
- 8 National Institute of Technology Raipur
- 9 Pandit Dwarka Prasad Mishra Indian Institute of Information Technology, Design & Manufacturing Jabalpur
- 10 Vellore Institute of Technology

The researchers in brainwave come from various universities like Jadavpur University, IITs, IIITs, Amity University, TCS Research, BIT Mesra, etc.

### Researchers with Highest publications\*



**Konar, Amit**

*Jadavpur University*

Motor Imagery; BCI; Electroencephalogram  
Near-Infrared Spectroscopy; Diffuse Optical  
Tomography; Brain Computer Interface



**Sinha, Rakesh Kumarala**

*Birla Institute of Technology, Mesra*

Motor Imagery; BCI; Electroencephalogram



**Pachori, Ram Bilas**

*Indian Institute of Technology, Indore*

Support Vector Machine; Seizures; Bonn  
Motor Imagery; BCI; Electroencephalogram



**Khasnobish, Anwasha**

*TCS Research, Kolkata*

Motor Imagery; BCI; Electroencephalogram  
Muscle; Neural Control; Factorization Method



**Bajaj, Varun**

*IIIT DM, Jabalpur*

Support Vector Machine; Seizures; Bonn  
Support Vector Machine; Electroencephalography; BCI



**Kumar, Velayudhan Mohan**

*SCTIMST*

Positive End Expiratory Pressure; (...); Adherence  
Sleep Apnea Syndromes; Sleep; (...)



**Tibarewala, Dewaki Nandan**

*Jadavpur University*

Motor Imagery; BCI; Electroencephalogram  
Support Vector Machine; Seizures; Bonn



**Mallick, Birendra Nath**

*Amity University, Noida*

REM Sleep; Rapid Eye Movement State; Slow Wave  
Sleep



**Routray, Aurobinda**

*Indian Institute of Technology, Kharagpur*

EEG; Independent Component Analysis; Support  
Vector Machine; Electroencephalography; BCI





**Goyal, Nishant**

*Central Institute of Psychiatry, Ranchi*

Electroencephalogram; Imitation; Action Understanding  
Electroencephalography; (...); Involitional Depression



## The top research papers on brainwave focused on diagnosing neurological disorders using EEG

### 1 Real-time fMRI neurofeedback: Progress and challenges

 Sulzer, J., Haller, S., Scharnowski, F., (...), Seifritz, E., Sitaram, R.  
 *NeuroImage* 76, pp. 386-399



 2013  
 307



### 2 Automated EEG-based screening of depression using deep convolutional neural network

 Acharya, U.R., Oh, S.L., Hagiwara, Y., (...), Adeli, H., Subha, D.P.  
 *Computer Methods and Programs in Biomedicine* 161, pp. 103-113



 2018  
 301



### 3 A new interpretation of nonlinear energy operator and its efficacy in spike detection

 Mukhopadhyay, S., Ray, G.C.  
 *IEEE Transactions on Biomedical Engineering* 45(2), pp. 180-187

 1998  
 296

### 4 A comparative study of wavelet families for EEG signal classification

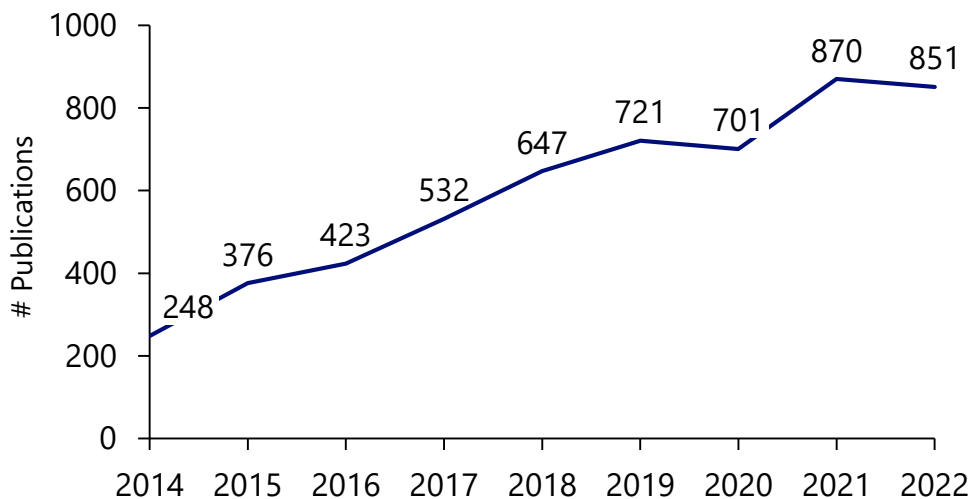
 Gandhi, T., Panigrahi, B.K., Anand, S.  
 *Neurocomputing* 74(17), pp. 3051-3057

 2011  
 241

## Research on robotics is mainly limited to institutes of national importance (IITs, NITs, IISc, etc.), VIT is the only key institute in top 10

- The keyword “robotics” has been used in the Scopus database
- Due to limited work in the field, all related keywords were captured in “robotics” keyword

### Key Statistics



India's robotics research community is making significant contributions to the field, and there is a growing focus on developing advanced robotic systems for a wide range of applications

### Key Institutions\*

- 1 Indian Institute of Technology, Madras
- 2 Indian Institute of Technology, Kanpur
- 3 Indian Institute of Technology, Delhi
- 4 International Institute of Information Technology, Hyderabad
- 5 Indian Institute of Science
- 6 Indian Institute of Technology Bombay
- 7 All India Institute of Medical Sciences, New Delhi
- 8 Indian Institute of Technology Kharagpur
- 9 National Institute of Technology Rourkela
- 10 Vellore Institute of Technology



## Researchers in the field have focus in cognitive robotics, control system, mobile robotics and mechatronics among others

### Researchers with Highest publications\*



**Krishna, K. Madhava**

*International Inst. of Information Tech., Hyderabad*  
Mobile robotics, robotic vision, outdoor robotics, multi-robotic systems and mechanism design



**Biswal, B.B.**

*National Institute of Technology, Rourkela*  
Robotics, FMS, CNC, Computer Integrated Manufacturing, Rapid Product Manufacturing



**Saha, S.K.**

*Indian Institute of Technology, Delhi*  
Multibody Dynamics, Robotics, Design, Mechatronics.



**Behera, L.**

*Indian Institute of Technology, Mandi*  
Intelligent Systems & Control, Cognitive Robotics, Nano-robotics, Vision Based Control



**Thondiyath, A.**

*Indian Institute of Technology, Madras*  
Robotics underwater robots, mobile robots & medical robots, Electro hydraulic Controls



**Majumder, S.**

*CSIR-Central Mechanical Engineering Research Inst.*  
Robotics; Cognitive Robotics, Micromanipulation



**Dutta, Ashish**

*Indian Institute of Technology, Kanpur*  
Robotics, Intelligent Control Systems, Microsensors and Actuators, Bio-Robotics



**Bhaumik, Subhasis**

*Indian Inst. of Engineering Science & Tech., Shibpur*  
Mechatronics, robotics, mobile robotics, orthotic & prosthetic devices, smart material & micro gripper



**Kala, Rahul**

*Indian Institute of Information Tech., Allahabad*  
Mission Planning for Mobile Robots, Robot Motion Planning, Intelligent Vehicles Transportation Sys.





**Megalingam, Rajesh Kannan**

*Amrita University, Amritapuri Campus, Kollam*  
Design For Manufacturing, Embedded Systems, Low Power VLSI



## Theme of the highly cited work in robotics is around it's use in healthcare, medical devices and automated hardware

### 1 Recommendations for laparoscopic liver resection: A report from second international consensus conference

 Wakabayashi, G., Cherqui, D., Geller, D.A., (...), Barkun, J., Strasberg, S.M.  
 *Annals of Surgery*, 261(4), pp. 619-629



 2015  
 886

### 2 Dynamic analysis of flexible manipulators, a literature review

 Dwivedy, S.K., Eberhard, P.  
 *Mechanism and Machine Theory*, 41(7), pp. 749-777



 2006  
 777

### 3 Artificial neural networks in hardware: A survey of two decades of progress

 Misra, J., Saha, I.  
 *Neurocomputing*, 74(1-3), pp. 239-255

 2010  
 467

### 4 Extended-state-observer-based control of flexible-joint system with experimental validation

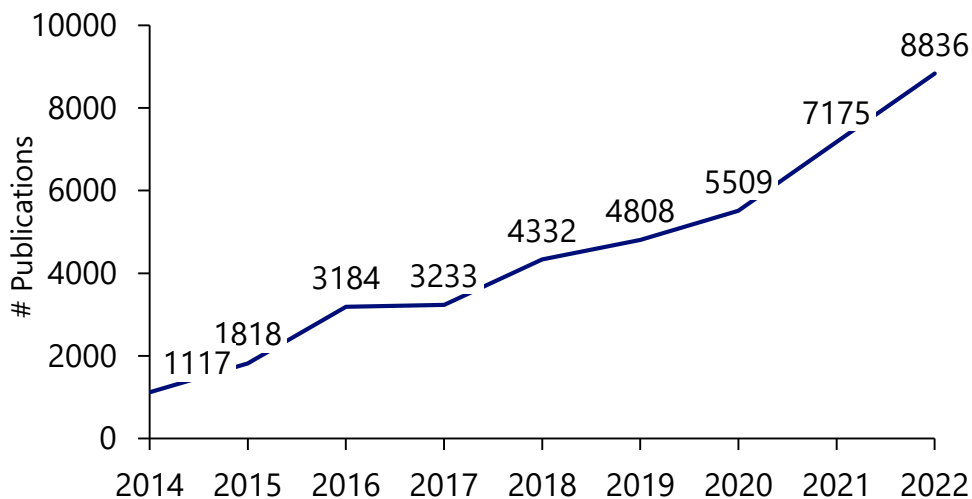
 Talole, S.E., Kolhe, J.P., Phadke, S.B.  
 *IEEE Transactions on Industrial Electronics*, 57(4), 5210149, pp. 1411-1419

 2010  
 413

## Research on AI and IoT has been growing fast since 2016, key research institutions include private, deemed to be and institutes of national importance

- The keywords "artificial intelligence" & "internet of things" were shortlisted after searching the topic of interest ("AI" & "IoT") in the Scopus database and selecting the related keywords

### Key Statistics



AI and IoT research in India is driving innovation and growth across sectors, mainly healthcare, agriculture, manufacturing and education. It has high potential to make significant contributions to India's economy and society

### Key Institutions\*

- 1 Vellore Institute of Technology
- 2 Amity University
- 3 Anna University
- 4 SRM Institute of Science and Technology
- 5 Indian Institute of Technology, Kharagpur
- 6 Jadavpur University
- 7 Indian Institute of Technology, Delhi
- 8 K L Deemed to be University
- 9 Thapar Institute of Engineering & Technology
- 10 Lovely Professional University

## Researchers in the field have focus in computer science, sensor network, soft computing, network security

### Researchers with Highest publications\*



**Kumar, Neeraj**

*Shri Ramswaroop Memorial University, Barabanki*  
Computer Science Theory and Methods



**Misra, Sudip**

*Indian Institute of Technology Kharagpur*  
Ad Hoc & Sensor Networks, Nano-Networks,  
Computer Networks, Cloud Networking.



**Tanwar, Sudeep**

*Institute of Technology, Nirma University*  
Network Security, Wireless Sensor Networks , Data  
Communication, Blockchain Technology



**Kumar Das, Ashok**

*International Inst. of Information Tech., Hyderabad*  
Cryptography, system & network security, security in  
smart grid, Internet of Things (IoT), Internet of Drones



**Choudhury, Tanupriya**

*University of Petroleum and Energy Studies*  
Data Mining, Business Analytics, Soft Computing,  
Human Computer Interaction, Machine Learning



**Gupta, B B**

*National Institute of Technology, Kurukshetra*  
Computer Science Artificial Intelligence



**Sangaiah, Arun Kumar**

*Vellore Institute of Technology*  
Computational Intelligence, Internet of Things,  
Cognitive Computing



**Kumari, Saru**

Siksha O Anusandhan  
CdS; Hydrogen Production; Photocatalyst  
Catalyst; Cobalt Phosphide; Water Splitting



**Sood, Sandeep K.**

*National Institute of Technology, Kurukshetra*  
Network Security, Internet of Things, Sensor  
Networks



**Gupta, D**

*Maharaja Agrasen Institute of Technology,*  
Human-Computer Interaction, Intelligent Data  
Analysis, Nature-Inspired Computing, ML

## Themes of highly cited papers revolve around ML, deep learning and algorithms; Research paper on IoT by Sethi, P., Sarangi, S.R. is one of the recent & highly cited,

### 1 Twin support vector machines for pattern classification



Jayadeva, Khemchandani, R., Chandra, S.

*IEEE Transactions on Pattern Analysis and Machine Intelligence*, 29(5), pp. 905-910



2007



1198

### 2 Internet of things: Applications and challenges in technology and standardization



Bandyopadhyay, D., Sen, J.

*Wireless Personal Communications*, 58(1), pp. 49-69



2011



1023

### 3 Internet of Things: Architectures, Protocols, and Applications



Sethi, P., Sarangi, S.R.

*Journal of Electrical and Computer Engineering*, 2017,9324035



2017



877

### 4 A survey on opinion mining and sentiment analysis: Tasks, approaches and applications



Ravi, K., Ravi, V.

*Knowledge-Based Systems*, 89, pp. 14-46



2015



854

# Contents

- 0 Purpose of the study
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- 3 Database Introduction & Recommendation
- 4 Database Guide
- 5 Domain wise case study
- 6 Appendix

## Key terminologies

Terminology	Description
Researcher indices	<ul style="list-style-type: none"> <li>• Measure contributions made by a researcher to their field of research</li> <li>• Includes citations, h-index, i10 index, etc.</li> </ul>
ORCID ID	<ul style="list-style-type: none"> <li>• Persistent unique digital identifier</li> <li>• Can be connected with professional information (affiliations, grants, publications, peer review, etc.)</li> </ul>
Scopus ID	<ul style="list-style-type: none"> <li>• Identifier used by Scopus Database</li> <li>• Can be linked to ORCID to import publications at both databases</li> </ul>
Researcher ID	<ul style="list-style-type: none"> <li>• Identifier introduced by Thomson Reuters Corporation</li> <li>• Consolidates multiple research profiles into an individual webpage</li> </ul>
Google Scholar ID	<ul style="list-style-type: none"> <li>• Unique identifier for researchers associated with Google Scholar profile</li> </ul>
Academia ID	<ul style="list-style-type: none"> <li>• Unique identifier for researchers associated with Academia (social platform for academics to share research publications)</li> </ul>
Altmetrics	<ul style="list-style-type: none"> <li>• Metrics and qualitative data complementary to traditional, citation-based metrics</li> <li>• Includes mentions on Wikipedia &amp; policy documents, research blogs, media, social networks, etc.</li> </ul>
Co author network	<ul style="list-style-type: none"> <li>• Social networks reflect collaboration among researchers and are represented by nodes in network</li> </ul>

## Key Terminologies

Terminology	Description
Contact	<ul style="list-style-type: none"> <li>Ease of contacting a researcher via the database (availability institute details, etc.)</li> </ul>
Publication	<ul style="list-style-type: none"> <li>Availability of researcher publications data</li> </ul>
Patents	<ul style="list-style-type: none"> <li>Availability of researcher patent data (list, etc.)</li> </ul>
Researcher Indices	<ul style="list-style-type: none"> <li>The number of indices captured by a database (higher the number of indices faster the updates)</li> </ul>
Custom Search	<ul style="list-style-type: none"> <li>Customisation while searching a researcher (searching by name, expertise area, institute, etc.)</li> </ul>
Filter by country	<ul style="list-style-type: none"> <li>Selection of researchers based on country</li> </ul>
IDs linked	<ul style="list-style-type: none"> <li>Number of researcher IDs linked to a database</li> </ul>
Differentiator	<ul style="list-style-type: none"> <li>Value addition unique to the database</li> </ul>



## ORCID public data file & public API can be used to access public data while member API could be used to access data restricted to trusted parties

### Researcher Data available in ORCID registry

#### Personal Details

Other Names

Biography

Researcher URLs

E-mail addresses

Address

Keywords

External Identifiers

#### Research-related Details

Distinction

Education

Employment

Invited Position

Membership

Qualification

Service

Funding

Peer Reviews

Works

Research Resources

ORCID public data file & API can be used to access public data while member API can be used to access data restricted to trusted parties

1. Researchers in ORCID can choose to keep their information public, restricted to trusted parties or private
2. >80% of the data is public
3. These data can be accessed through:
  - Public Data file: contains all publicly available information and can be downloaded and accessed by anyone
  - Public API: available to all organizations and can be used to access publicly available information
  - Member API: available to member organizations. It can be used to access
    - Public data
    - Data restricted to trusted parties (subject to permissions granted by researchers)

## Organisation Type (1/2)

Organisation Type	Description
Central University	<ul style="list-style-type: none"> <li>• A university established or incorporated by a Central Act</li> <li>• Funds are allocated by the Ministry of Education through UGC</li> </ul>
Central Govt. Institute/ Centrally Funded Institute	<ul style="list-style-type: none"> <li>• National institutes or central institutes are institutes established and funded by the Government of India</li> <li>• It also includes the Institutes of National Importance</li> </ul>
Centrally Funded Technical Institute	<ul style="list-style-type: none"> <li>• Institutions providing technical education and are funded by the Central Govt.</li> <li>• There are 121 CFTIs in the country including 23 IITs, 20 IIMs, 31 NITs</li> </ul>
College	<ul style="list-style-type: none"> <li>• Institutes providing higher education, but not granting a degree on its own</li> <li>• Usually affiliated to a University to award degrees</li> </ul>
Deemed University	<ul style="list-style-type: none"> <li>• Institutions working with high standard in specific area of study, are sometimes declared as 'Deemed-to-be-university' by Central Govt. They enjoy privileges of a university; can be Govt. (central/state) or Govt. aided OR private</li> </ul>
Deemed University- Government	<ul style="list-style-type: none"> <li>• Deemed universities that are run and funded by the Govt. (Central/state)</li> </ul>
Deemed University- Government aided	<ul style="list-style-type: none"> <li>• Deemed universities that are run and , funded by private organisations, but also receive aid from the Govt.</li> </ul>
Deemed University- Private	<ul style="list-style-type: none"> <li>• Deemed universities that are run and funded by private organisations</li> </ul>
Institute Under State Legislature Act	<ul style="list-style-type: none"> <li>• An Institution established or incorporated by a State Legislature Act</li> </ul>

## Appendix | Database guide

## Organisation Type (2/2)

Organisation Type	Description
Institutions of National Importance/ National Importance Institute	<ul style="list-style-type: none"> <li>Institutions of National Importance are university-level institutions that are established or designated by Acts of Parliament and funded by the Central Government</li> </ul>
Inter-University Centres of UGC	<ul style="list-style-type: none"> <li>Autonomous centers setup by the UGC to provide common facilities for research, and for various services and programmes to the universities</li> </ul>
Management Institute	<ul style="list-style-type: none"> <li>Institutes providing management education</li> </ul>
Medical Institute	<ul style="list-style-type: none"> <li>Institutes providing medical education</li> </ul>
Research & Development/ Research Institute	<ul style="list-style-type: none"> <li>Do not grant degree nor are affiliated to a degree granting university</li> <li>Engaged in pure or applied research across areas</li> </ul>
State Agricultural University (SAU)	<ul style="list-style-type: none"> <li>Autonomous organizations with state-wide responsibility for agricultural research, education and training or extension education. Primarily funded by state governments, but also get regular grants from the ICAR</li> </ul>
State Private University	<ul style="list-style-type: none"> <li>Established through a central/state act</li> <li>Run by a sponsoring body viz. A Society, or a Public Trust or a Company</li> </ul>
State/ State Public University	<ul style="list-style-type: none"> <li>A university established or incorporated by a Provincial Act or by a State Act.</li> <li>Run and primarily funded by state government of each of the state &amp; union territories of India</li> </ul>
Technical Institute	<ul style="list-style-type: none"> <li>Institutes providing technical education, cover programmes in engineering, technology, management, architecture, town planning, pharmacy, applied arts &amp; crafts, hotel management and catering technology</li> </ul>

## Homepage: VIDWAN - Search page

The screenshot shows the VIDWAN search interface. At the top, there is a search bar with the text 'green hydrogen' and a 'Search' button. A dropdown menu is open on the left, listing various filters: All, Expert Name, Organisation, Designation, Expertise (highlighted), Honour Awards, Organisation Type, State, and Web of Science. Below the search bar, the results are displayed. The first result is for Prof Suresh Sundaramurthy, an Assistant Professor (Grade-I) in Chemical Engineering. His profile includes a list of 16 research areas and his affiliation with Maulana Azad National Institute of Technology Bhopal, Madhya Pradesh. A 'View Profile' button is visible at the bottom right of the profile card. The search results are sorted by Expert ID and show 100 results per page.

## Search results page

A

- Input: Researcher Expertise/ Affiliation

B

- Output: Researcher profiles
  - Expertise
  - Affiliation

## Homepage: VIDWAN - Researcher Profile page

The screenshot shows a researcher profile for Prof. Suresh Sundaramurthy. The page is annotated with letters A through F, pointing to various sections:

- A:** Points to the researcher's name and affiliation: Prof. Suresh Sundaramurthy, Assistant Professor (Grade-I), Maulana Azad National Institute of Technology Bhopal.
- B:** Points to the left-hand navigation menu, specifically the 'Expertise Information' section.
- C:** Points to the 'Research Project' and 'Publications' sections in the left-hand menu.
- D:** Points to the 'Academic' section, which includes ORCID, Scopus, and Researcher ID.
- E:** Points to the 'Citations / H-Index' section, showing 1037 citations, an H-index of 18, and 496 Crossref citations.
- F:** Points to the 'Co-author Network' section, showing 126 publications and 169 co-authors.

Other visible data on the page includes a Vidwan Score of 9.8, a summary of 86 articles, 23 books, 17 projects, and 15 awards, and a list of similar experts from the same organization.

## Profile page

- A • Affiliation
- B • Expertise
- C • Research projects  
• Patents, Publications
- D • Researcher IDs
- E • Citations  
• h-index, i-10 index
- F • Co-author network

## Homepage: NSTMIS - Indian Origin Academics

## SEARCH DATABASE

Search Option

University Name **A**

Foreign University Name

Select Search Option

Academician Name

**Foreign University Name**

Department

SEARCH

## Search page

**A**

- Input: Researcher name/ University/ Department

REFINE RESULTS IN  
'UNIVERSITIES'

Indian University Name OR College Name

- Any -

Type

- Any -

Department

- Any -

APPLY

## INFORMATION

> Statistics

## UNIVERSITIES

Displaying 1 - 1 of 1 Academics

**HARISH SIVASANKARAN** **B**

Japan

Principal Researcher

The University of Tokyo

kcmharish@gmail.com

Engineering

VIEW PROFILE

Google  
rejects  
provid

## Search results page

**B**

- Researcher name
- Affiliation
- E-mail ID
- Expertise

# Databases Introduction & Recommendation | Database preview: Scopus

## Homepage: Scopus (without subscription login)

Author last name:  Author first name:

e.g. Smith e.g. J.L.

Affiliation:   Show exact matches only

ORCID:

This author profile is generated by Scopus [Learn more](#)

**Dixit, Pradeep**

Indian Institute of Technology Bombay, Mumbai, India

13405358300 <https://orcid.org/0000-0001-6706-1877>

1,383 Citations by 878 documents | 93 Co-authors | 21 h-Index View h-graph

Document & citation trends

Most contributed Topics 2017–2021

- Electrolyte; Glass Ceramics; Brittle Materials (18 documents)
- Accelerometer; Sensor; Gyroscopes (6 documents)
- Intermetallics; Copper; Tin (5 documents)

View all Topics

79 Documents | Cited by 878 Documents | 0 Preprints | 93 Co-Authors | 8 Topics | 0 Awarded Grants

Note: Scopus Preview users can only view an author's last 10 documents, while most other features are disabled. Do you have access through your Institution? Check your Institution's access to view all documents and features.

Export all | Add all to list | Sort by Date (newest)

Article: Theoretical and numerical investigation of a new 3-axis SU-8 MEMS piezoresistive accelerometer

0 Citations

khilfi, A., Ahmed, A., Moughani, B., ...Tounsi, F., Baghini, M.S. *Microelectronics Journal*, 2022, 178, 105552

### Search page

- Input: Researcher name/ Affiliation
- Output: Researcher profiles

### Profile page

- Researcher name
- Affiliation
- Scopus ID, ORCID

- Citations
- h-index

- Publications
- Patents

## Databases Introduction &amp; Recommendation | Database preview: Scopus

## Homepage: Scopus (with subscription login)

- Scopus Researcher Discovery Pilot allows to search researchers by expertise, sort them by some metrics, & filter by country and institution

Pilot

Matching researchers for: [About Researcher Discovery](#)

Enter keywords  
"green hydrogen" **A**

**Search**

Results based on matching documents since 2017

Refine by [Export all results](#) [About the metrics](#) Sort by **B**

Matching documents from

This year  
 Last 2 years  
 Last 3 years

**C** Country

Type country name

India  
 China  
 Denmark  
 Canada  
 Australia  
[Show all](#)

Organizations

Type organization name

K. J. Somaiya Institute of Technology  
 Indian Institute of Chemical Technology  
 Indian Institute of Technology Kharagpur  
 Institute of Chemical Technology  
 Central Electrochemical Research Institute India  
[Show all](#)

Author information	Number of matching documents	Total citations	h-index (Highest)	h-index (Lowest)
Aminabhavi, Tejraj M. KLE Technological University, India <a href="#">Preview profile</a>	1	2196		
Venkata Mohan, Srinivasula Reddy Indian Institute of Chemical Technology, India <a href="#">Preview profile</a>	4	1159		
Chattaraj, Pratim K. Indian Institute of Technology Kharagpur, India <a href="#">Preview profile</a>	1	7576	429	61
Bhanage, Bhalchandra M. Institute of Chemical Technology, India <a href="#">Preview profile</a>	2	9979	449	59
Kundu, Subrata Central Electrochemical Research Institute India, India <a href="#">Preview profile</a>	5	9886	260	57
Shetti, Nagaraj P. KLE Technological University, India <a href="#">Preview profile</a>	1	4331	243	57
Devarajan, Yuvarajan Saveetha School of Engineering, India <a href="#">Preview profile</a>	1	1554	118	54
Bhaskar, Thallada Indian Institute of Petroleum, India <a href="#">Preview profile</a>	1	6043	259	51

**A** Search Researchers by expertise  
keywords are matched against title, abstract, and journal name of articles

**B** Sort Researchers by

- h-index
- Total citation
- Total documents
- Matching documents

**C** Filter Researchers by

- Country
- Organization



## Homepage: ORCID - Search page

ADVANCED SEARCH **A**

First Name:

Last Name:

Institution Name:

Keyword:

Also search other name fields

ORCID ID:

**SEARCH**

Showing 7 of 7 results.

Items per page: 50 1 - 7 of 7 &lt; &gt;

ORCID ID	First Name	Last Name	Other Names	Affiliations
<a href="#">0000-0002-1590-5609</a>	Ravi	Sankannavar		American Chemical Society, Electrochemical Society, Indian Institute of Chemical Engineers, Indian Institute of Science, Indian Institute of Technology Bombay, International Society of Electrochemistry, M S Ramaiah Institute of Technology, National Institute of Technology Karnataka, Rashtreeya Vidyalaya College of Engineering
<a href="#">0000-0003-0614-6206</a>	Nikhil	Mathew		Christ University, Indian Institute of Technology Mandi, International Advanced Research Centre for Powder Metallurgy and New Materials, International Society for Energy, Environment and Sustainability, Mechwell Industries Pvt. Ltd., Onelement Energy Pvt. Ltd.

**B**

## Search results page

**A**

- Input: Researcher Affiliation/Expertise

**B**

- Output: Researcher profiles

# Homepage: ORCID - Researcher Profile page

**ID**  
https://orcid.org/  
0000-0002-1590-5609

Is this you? [Sign in to start editing](#) [Printable version](#)

Published name  
**Ravi Sankannavar**

Name  
Ravi Sankannavar

**Biography**  
Dr. Ravi Sankannavar is working as an Assistant Professor in the Department of Chemical Engineering and also a Faculty Incharge at the Centre for Advanced Materials Technology (CAMT) of M. S. Ramiah Institute of Technology, Bangalore. Before that, he worked as a Research Associate/Research Fellow at the Indian Institute of Technology (IIT) Bombay, Mumbai, India with Prof. Arindam Sarkar on fabrication and electrochemical testing of nickel oxide-based electrodes for alkaline water electrolysis, and redox flow batteries. He graduated with a Ph.D. in Chemical Engineering from the IIT Bombay in August 2019 and his thesis was on "Tailoring the Oxidation State of Transition Metals in NiO, LaNiO<sub>3</sub>, and LaFeO<sub>3</sub> for Boosting the Oxygen Evolution Reaction Activity". Prior to joining for the Ph.D. program, he has done both B.E. and M.E. in Chemical Engineering from RVCE, Bangalore and IISc, Bangalore, respectively. His research interests focus on "Energy and Environment". In particular, he is interested in the development of electrochemical processes for energy conversion and storage devices such as water electrolyzers, fuel cells, and rechargeable batteries. He is also interested to pursue new electrocatalysts and/or approaches for electrochemical reduction of CO<sub>2</sub> and N<sub>2</sub> to valuable chemicals, and electrochemical methods for drinking water treatment. In the past, he has also worked on "Removal of Fluoride from Drinking Water" using (a) solar still and (b) hydroxyapatite.

**Activities** [Expand all](#)

- Employment (4)** [Sort](#)
- Education and qualifications (3)** [Sort](#)
- Membership and service (4)** [Sort](#)
- Funding (1)** [Sort](#)
- Works (18)** [Sort](#)

**Hydroxyapatite nanoparticles synthesized with a wide range of Ca/P molar ratios and their structural, optical, and dielectric characterization**

Journal of the Korean Ceramic Society  
2022-07-27 | Journal article  
DOI: [10.1007/s43207-022-00225-w](#)  
Part of ISSN: [1229-7801](#)  
Part of ISSN: [2234-0491](#)  
CONTRIBUTORS: Ravi Sankannavar

Source: Ravi Sankannavar

**Insights on the various structural, optical and dielectric characteristics of La<sub>1-x</sub>CaxFeO<sub>3</sub> perovskite-type oxides synthesized through solution-combustion technique**

Applied Physics A  
2022-05-23 | Journal article [Show more detail](#)

**Other IDs**

Scopus Author ID: 57195644397  
Loop profile: 1781082  
SciProfiles: 1315574

**Keywords**

Chemical Engineering, Energy and environment, Electrochemical Engineering, Material synthesis and characterization, Water Electrolysis, Green hydrogen and Green ammonia, Oxygen Evolution Reaction, Electrochemical nitrogen fixation, Electrochemical CO<sub>2</sub> reduction, Fluoride removal and fluorosis reversal

**Countries**

India

**Emails**

ravi.sankannavar@msrit.edu

**Websites & social links**

Personal Webpage  
LinkedIn  
Google Scholar  
publons  
Vidwan-ID : 98779  
Home Page @Chemical, MSRT Bangalore  
Academia  
ResearchGate  
Twitter  
MSRIT IRINS

## Profile page

- A
- Affiliation
- B
- E-mail ID
- C
- Researcher IDs
- D
- Publications
- Patents

## Databases Introduction &amp; Recommendation | Database preview: IEEE Explore

## Homepage: IEEE Explore - Search &amp; Search Results page

**Advanced Search** | Command Search | Citation Search

Enter keywords and select fields.

Search Term: electro-mechanical in Author Keywords ?

AND Search Term: Indian Institute of Technology Bombay in Author Affiliations ↑ ×

AND Search Term: in All Metadata ↑ × +

---

**Show**

All Results  
 Open Access Only

**Year** ^

Single Year | Range

2020 | 2020

From: 2020 To: 2020

**Author** ∨

**Affiliation** ∨

Select All on Page Sort By: Relevance ∨

**Fabrication and Characterization of Through-glass vias (TGV) based 3D Spiral and Toroidal Inductors by Cost-effective ECDM Process** 🔒

Harindra K. Kannoja; Julfekar Arab; Aboobackkar Sidhique; Dileep K. Mishra; Ritesh Kumar; Jaisingh Pednekar; Pradeep Dixit  
2020 IEEE 70th Electronic Components and Technology Conference (ECTC)  
Year: 2020 | Conference Paper | Publisher: IEEE

▶ Abstract [HTML](#) [PDF](#) [CC](#)

---

**Fabrication of CMOS Compatible 2-terminal NEMS for Low Power Applications** 🔒

Sumit Saha; Maryam Shojaei Baghini; Mayank Goel; V. Ramgopal Rao  
2020 5th IEEE International Conference on Emerging Electronics (ICEE)  
Year: 2020 | Conference Paper | Publisher: IEEE

▶ Abstract [HTML](#) [PDF](#) [CC](#)

## Search page

A

- Input: Researcher Expertise/ Affiliation

## Search Result page

B

- Output: Researcher publications

## Homepage: IEEE Explore - Researcher Profile page

**Harindra K. Kannojia**

Also published under: Harindra Kumar Kannojia

**Affiliation**  
 Electrochemical Microfabrication Laboratory  
 Indian Institute of Technology Bombay  
 Mumbai, Maharashtra, India

**Publication Topics**  
 electrical discharge machining, electrochemical machining, electrodeposition, electroplating, Q-factor, annealing, chemical interdiffusion, copper, copper compounds, design engineering, electrical resistivity, electrodes, encapsulation, etching, glass, inductors, integrated circuit interconnections, metallic thin  
 Show More

**Publications**  
3

**Citations**  
3

**Publications by Year**

Year	Publications
2019	1
2020	2

**Co-Authors:**  
 Julfekar Arab  
 Pradeep Dixit  
 Ritesh Kumar  
 Dileep K. Mishra  
 Jaisingh Pednekar  
 Show All Co-Authors (6)

**This Author's Publications**

Search within results

Export | Search History

Showing 1-3 of 3 results

Conferences (3)

**Show**

All Results  
 Open Access Only

**Year**

Single Year Range

2019 2020

Select All on Page

Sort By: Newest First

**D** **Fabrication and Characterization of Through-glass vias (TGV) based 3D Spiral and Toroidal Inductors by Cost-effective ECDM Process**  
 Harindra K. Kannojia; Julfekar Arab; Aboobackkar Sidhique; Dileep K. Mishra; Ritesh Kumar; Jaisingh Pednekar; Pradeep Dixit  
 2020 IEEE 70th Electronic Components and Technology Conference (ECTC)  
 Year: 2020 | Conference Paper | Publisher: IEEE  
 Abstract HTML

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## Search page

- A**
- Researcher Affiliation

- B**
- Researcher Expertise

- C**
- Co Authors
  - Citations

- D**
- Researcher Publications

# Homepage: Google Scholar

**A** Search results page

Google Scholar pradeep dixit

Articles About 7,000 results (0.06 sec)

Any time Since 2023 Since 2022 Since 2019 Custom range...

Sort by relevance Sort by date

User profiles for pradeep dixit

**Pradeep Dixit**  
IIT Bombay India, NTU Singapore, VTT Finland  
Verified email at iitb.ac.in  
Cited by 1725

Failure mechanisms and optimum design for electroplated copper through-silicon vias (TSV)  
X Liu, Q Chen, P Dixit, R Chatterjee, ... - 2009 59th Electronic ... - 2009 - ieeexplore.ieee.org

**B** Profile page

**Pradeep Dixit**  
IIT Bombay India, NTU Singapore, VTT Finland  
Verified email at iitb.ac.in - Homepage  
Microfabrication Through silicon vias Micromachining MEMS Packaging

GET MY OWN PROFILE

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	All	Since 2018
Citations	1725	808
h-index	22	17
i10-index	39	29

Public access VIEW ALL

13 articles not available 4 articles available

Based on funding mandates

Co-authors

- Jianmin Mao Nanyang Technological University
- Juliekar Arab Post-doctoral Researcher, Indian...
- Deep Kumar Mishra Indian Institute of Technology Bo...
- Harindra Kumar Kannjoia Indian Institute of Technology, Bo...
- John H L PANG Nanyang Technological University
- Rao Tummala

**C** Citations

**D** Publications

TITLE	CITED BY	YEAR
Failure mechanisms and optimum design for electroplated copper through-silicon vias (TSV) X Liu, Q Chen, P Dixit, R Chatterjee, RRR Tummala, SK Silaraman 2009 59th Electronic components and technology conference, 624-629	207	2009
Aspect-ratio dependent copper electrodeposition technique for very high aspect-ratio through-hole plating P Dixit, J Mao Journal of the Electrochemical Society 153 (6), G552	175	2006
Through-wafer electroplated copper interconnect with ultrafine grains and high density of nanowires L Xu, P Dixit, J Mao, JHL Pang, X Zhang, KN Tu, R Preisser Applied physics letters 90 (3), 033111	101	2007
Structure and migration of (112) step on (111) twin boundaries in nanocrystalline copper L Xu, D Xu, KN Tu, Y Cai, N Wang, P Dixit, JHL Pang, J Mao Journal of Applied Physics 104 (11), 113717	61	2008
Mechanical and microstructural characterization of high aspect ratio through-wafer electroplated copper interconnects P Dixit, L Xu, J Mao, JHL Pang, R Preisser Journal of Micromechanics and Microengineering 17 (9), 1749	61	2007
Effect of SF6 flow rate on the etched surface profile and bottom grass formation in deep reactive ion etching process P Dixit, J Mao Journal of Physics: Conference Series 34 (1), 095	61	2006
Fabrication of high aspect ratio 35 μm pitch through-wafer copper interconnects by electroplating for 3-D wafer stacking P Dixit, J Mao, R Preisser Electrochemical and solid-state letters 9 (10), G305	54	2006
Fabrication and characterization of fine pitch on-chip copper interconnects for advanced wafer level packaging by a high aspect ratio through AZ9260 resist electroplating P Dixit, CW Tan, L Xu, N Lin, J Mao, JHL Pang, P Backus, R Preisser Journal of Micromechanics and Microengineering 17 (5), 1078	53	2007
High aspect ratio vertical through-vias for 3D MEMS packaging applications by optimized three-step deep RIE P Dixit, J Mao Journal of the Electrochemical Society 155 (2), H85	50	2007
Fabrication of multiple through-holes in non-conductive materials by Electrochemical Discharge Machining for RF MEMS Packaging J Arab, DK Mishra, HK Kannjoia, P Athale, P Dixit Journal of Materials Processing Technology 271, 542-553	48	2019
Silicon nanopillars based 3D stacked microchannel heat sinks concept for enhanced heat dissipation applications in MEMS packaging	47	2008

**E** Key Co-author names

## Search results page

- Input: Researcher name
- Output: Researcher profiles and publications

## Profile page

- Researcher name
- Affiliation
- Expertise

- Citations
- H index
- i-10 index

- Publications
- Patents

- Key Co-author names

# Homepage: Semantic Scholar

SEMANTIC SCHOLAR pradeep dixit Search Sign In

About 88,600 results for "pradeep dixit"

Fields of Study Date Range Has PDF Author Journals & Conferences Sort by Relevance

**A**

- P. Dixit: 91 Publications • 1,409 Citations • Materials Science
- P. Dixit: 52 Publications • 218 Citations • Medicine
- P. Dixit: 3 Publications • 58 Citations • Agricultural And Food Sciences

Show All Authors

## Search results page

- A** • Input: Researcher name
- Output: Researcher profiles (with expertise) and publications

**P. Dixit**

Publications 91  
h-index 22  
Citations 1,409  
Highly Influential Citations 24

Follow Author... Claim Author Page

Author pages are created from data sourced from our academic publisher partnerships and public sources.

Publications Influence Share This Author

Search Publications Co-Author Has PDF More Filters Sort by Most Influe...

**B**

**C**

**D**

**Failure mechanisms and optimum design for electroplated copper Through-Silicon Vias (TSV)**  
Xi Liu, Qiao Chen, P. Dixit, R. Chatterjee, R. Tummala, S. Sitaraman • Engineering • Electronic Components and Technology Conference • 26 May 2009

**Through-wafer electroplated copper interconnect with ultrafine grains and high density of nanotwins**  
Luhua Xu, P. Dixit, +4 authors R. Preisser • Materials Science • 17 January 2007

**Aspect-Ratio-Dependent Copper Electrodeposition Technique for Very High Aspect-Ratio Through-Hole...**  
P. Dixit, J. Miao • Engineering, Materials Science • 1 June 2006

**Fabrication of high aspect ratio 35 /spl mu/m pitch interconnects for next generation 3-D wafer level...**  
P. Dixit, J. Miao • Engineering • Electronic Components and Technology Conference • 5 July 2006

## Profile page

- B** • Researcher name
- h-index
- i-10 index
- C** • Key Co-authors
- D** • Publications

The text is framed by two decorative swooshes. The top swoosh is a gradient bar transitioning from blue on the left to red on the right. The bottom swoosh is a solid blue bar.

***Share the Next Values!***