IIT Hyderabad's Research Triumph: Unraveling the Impact and Output of Scholarly Publications (2008-2022)

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ABSTRACT

This scholarly article provides an in-depth assessment of the research scholarly excellence of the IIT Hyderabad by analyzing its research output from 2008 to 2022. The study employs scholarly metrics to evaluate research excellence. The analysis reveals that IIT Hyderabad has demonstrated robust research output, with over 7848 papers published in high-impact journals and more than 111151 citations received. The research conducted at IIT Hyderabad has made significant contributions to engineering and sciences, influencing society. These findings firmly establish IIT Hyderabad as a leading institute with a proven track record of research excellence. The article concludes that IIT Hyderabad is poised to continue contributing to knowledge and society, making it a valuable resource for policymakers, researchers, and stakeholders in higher education.

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KEYWORDS: IIT Hyderabad, Publications, Citations**.**

1. INTRODUCTION

The idea of establishing the Indian Institutes of Technology originated from Sir Ardeshir Dalal, who recognized the technology importance in India's future welfare after World War II and before independence. The committee chaired by Nalini Ranjan Sarkar proposed establishing four Higher Technical Institutes across different regions of India, taking inspiration from the United States Massachusetts Institute of Technology.

First Generation IITs: The Indian Institute of Technology, the first Higher Technical Institute founded in Kharagpur at the Hijli Detention Camp. The institute was officially inaugurated on August 18, 1951. Subsequently, 1958 IIT Bombay, 1959 IIT Madras and IIT Kanpur, and 1961 IIT Delhi were established. IIT Guwahati (1994) and IIT Roorkee (2001) were later added as the sixth and seventh IITs.

Second Generation IITs: In 2008, the establishment of new IITs in Bhubaneswar, Gandhinagar, Hyderabad, Patna, Rajasthan, and Ropar marked the second generation of IITs. Additionally 2009, two more IITs were established in Indore and Mandi.

Third Generation IITs: Institute of Technology, BHU was converted into IIT BHU, took place in 2012, giving rise to the third generation of IITs. Subsequently, IIT Tirupati and IIT Palakkad were established in 2015. Five more IITs were set up in 2016, IIT (ISM) Dhanbad, IIT Bhilai, IIT Goa, IIT Jammu, and IIT Dharwad. These third generation IITs have emerged as significant contributors to engineering and technology education in India, conducting high-quality research.

In 2008, establishing IIT Hyderabad at Telangana, India, marked a significant milestone. Initiating its operations in 2008, IIT Hyderabad admitted 111 B.Tech students through the same year's Joint Entrance Examination (JEE) in Computer Science and Engineering (CSE), Electrical Engineering (EE) and Mechanical and Aerospace Engineering (MAE) B.Tech Programs and admitted Ph.D. students in Civil Engineering(CE), Chemical Engineering(CHE), EE and MAE. In sciences Physics (PHY) and Chemistry (CHY) along with in Liberal Arts (LA) strengthening its research capabilities. In 2009, students were admitted to Ph.D. in Material Science and Metallurgical Engineering (MSME) and M.Tech in CHE, CSE, EE and MAE. Subsequently, in 2010, Students were admitted to M.Sc., in CHY, M.Tech in CE and MSME, Ph.D. in Biotechnology (BT) and Mathematics (MATH). The M.Sc. programs in PHY, B.Tech in CHE and Ph.D. in Biomedical Engineering (BME) was started in 2011. In 2012 the Liberal Arts Department established the M.Phil program, students were admitted to M.Tech in BME, BT and B.Tech in Engineering Science (ES) and CE. In 2013 students were admitted to M.Sc., in Mathematics/ Maths and Computing and B.Tech in Engineering Physics (End Phy). While the Department of Design inaugurated the M.Des program in 2014 and students were admitted to B.Tech in MSME. In 2015 students were admitted to Ph.D. in Design and Executive M.Tech in Data Science. In 2017, students were admitted to B.Tech in Mathematics and Computing. These additions broadened the academic offerings of IIT Hyderabad and facilitated interdisciplinary research pursuits. In 2019, B.Tech, M.Tech and Ph.D. in Artificial Intelligence (AI) along with B.Des and MA in Developmental Studies, M.Tech in Climate Change were launched. In 2020, B.Tech in Biomedical Engineering, Eight Industry-Oriented M.Tech Programs, Centre for Interdisciplinary Programs. In 2021, online M.Tech Programs, Interdisciplinary M.Tech, Ph.D. in Climate Change (CC), Interdisciplinary Ph.D, B.Tech in Biotechnology and Bioinformatics, Computational Engineering, Industrial Chemistry. In 2022, B.Tech in IC Design and Technology, M.Tech in Medical Device Innovation, Ophthalmic Engineering, Systems Packaging and Semiconducting Materials and Devices, Techno-Entrepreneurship, Transport Technology, and Heritage Science and Technology

IIT Hyderabad is a testament to India's commitment to fostering excellence in education and research. Through its comprehensive range of undergraduate, postgraduate, and doctoral programs, the institute delivers an encouraging environment for scholarly pursuits and interdisciplinary collaboration. The active engagement of faculty members and students in high-impact research, as exemplified by the institution's notable publication count and citation impact, is a testament to its research prowess. IIT Hyderabad's unwavering commitment to societal advancement is evident through its valuable contributions spanning engineering, science, medicine, and the social sciences. Positioned as a premier institute for research, IIT Hyderabad is suitably poised to continue its significant

contributions to expanding knowledge, fostering innovation, and advancing societal well-being. This comprehensive evaluation of IIT Hyderabad's research excellence is a valuable reference for policymakers, researchers, and higher education stakeholders, effectively showcasing the institute's accomplishments and potential for future growth.

This study aims to evaluate the research excellence of IIT Hyderabad by studying the research output from Scopus Database during 2008-22:

1. The number of publications and their trend through the study period
2. The growth in citations of publications
3. The prolific authors among the departments
4. Subject areas priority of publications
5. The best productive journals of publications
6. The best-cited articles from publications

2. LITERATURE REVIEW

This literature review encompasses several seminal studies that have significantly contributed to our understanding of various aspects of scientific research. Katz and Martin (1997) expanded upon Price's work and provided valuable insights into research collaboration, exploring the dynamics of joint endeavors and their impact on scientific outcomes. Savić et al. (2019) introduced co-authorship networks as a method for studying collaboration within research communities, conducting a comprehensive analysis of collaboration dynamics. Their research shed light on the complex relationships and patterns of cooperation, enhancing our understanding of how collaborative efforts contribute to research productivity and innovation (Savić et al., 2019).

Hirsch (2005) introduced the h-index as a quantitative metric for measuring scientific research output in individual research evaluation. This metric has gained widespread adoption as a valuable tool for assessing the scholarly contributions of researchers. Holmberg et al. (2020) focused on the potential impact of publishing in open-access journals, exploring the relationship between publishing models and research visibility. Their study provided insights into the influence of publishing models on research engagement and dissemination (Holmberg et al., 2020).

Several studies have examined research productivity within specific institutions. Yadav and Mallikarjuna (2022) analyzed research publications from second-generation Indian Institutes of Technology (IITs). Chaturbhuj and Motewar (2021) investigated research productivity at Savitribai Phule Pune University. Ghosh (2021) performed a bibliometric investigation of research output in Physics, Chemistry, and Mathematics at IIT Kharagpur. Jeevan and Gupta (2002) conducted a scientometric analysis of the research output of the Indian Institute of Technology (IIT) Kharagpur, evaluating the institution's research productivity and impact. Kumar (2022) presented a bibliometric study of the research productivity of Kurukshetra University, aiming to assess the university's research output and impact (Yadav & Mallikarjuna, 2022; Chaturbhuj & Motewar, 2021; Ghosh, 2021; Jeevan & Gupta, 2002; Kumar, 2022).

Ebadi and Schiffauerova (2013) conducted a literature review on the impact of funding on scientific output and collaboration. Their work sheds light on the multifaceted dynamics of scientific research by emphasizing the relationship between funding, research productivity, and collaborative endeavors (Ebadi & Schiffauerova, 2013). These scholarly publications offer valuable insights into research productivity, collaboration networks, impact

assessment, and the responsible use of research metrics. They contribute to the ongoing discussion on effective research evaluation practices and provide a deeper understanding of the intricate dynamics of scholarly research.

3. METHODOLOGY

The Scopus database was used as the primary data source for this study. The Scopus database is a comprehensive scholarly resource containing many academic articles, conference papers, and other research publications across various disciplines. To gather the relevant information for this study, a keyword search was conducted within the affiliation field of the Scopus database. The keyword used in this search was "Indian Institute of Technology Hyderabad." Using this keyword, the study aimed to identify publications affiliated with the Indian Institute of Technology Hyderabad.

This study focused on second-generation IITs, which include institutions established after the initial set of Indian Institutes of Technology. The search was limited to 2008 to 2022. This allowed the study to capture the latest developments and research activities related to the Indian Institute of Technology Hyderabad and other second-generation IITs.

The methodology employed in this study allowed for a systematic and rigorous approach to gathering and analyzing the relevant information. By utilizing the Scopus database and conducting a targeted keyword search, this study ensured the accuracy and relevance of the data. The focus on second-generation IITs and the time constraint from 2008 to 2022 further refined the scope of the study, enabling a comprehensive analysis of the subject matter.

4. RESULTS

Table 1: Publication summary table for the period 2008-2022 of second-generation IITs

Name of the IIT	Abbreviation	Year of establishment	h-Index	Total Publications	Total Citations	Average Citations per Paper	Yearly Average Output
IIT Bhubaneswar	IITBBS	2008	100	4448	69354	15.592	296
IIT Gandhinagar	IITGN	2008	99	3951	87547	22.158	263
IIT Hyderabad	IITH	2008	113	7848	111151	14.163	523
IIT Patna	IITP	2008	77	4979	48313	9.703	331
IIT Jodhpur	IITJ	2008	65	3037	26323	8.667	202
IIT Ropar	IITRPR	2008	88	4147	73863	17.811	276
IIT Mandi	IITMandi	2009	74	3727	37207	9.983	248
IIT Indore	IITI	2009	114	6418	97329	15.165	427

According to Table 1, among the second-generation IITs, IIT Hyderabad (IITH) stands out as the most productive institution, contributing 20% of the overall publications and leading with 7,848 publications. This indicates that IITH has demonstrated exceptional research productivity during 2008-2022. Furthermore, IITH maintains an impressive yearly average output of 523 publications, surpassing other institutions such as IIT Indore (IITI) with an average annual production of 427, IIT Patna (IITP) with 331 publications, IIT Bhubaneswar (IITBBS) with 296

publications, IIT Ropar (IITRPR) with 276 publications, IIT Gandhinagar (IITGN) with 263 publications, IIT Mandi (IITMandi) with 248 publications, and IIT Jodhpur (IITJ) with 202 publications.

The data indicates that IITH has produced a substantial number of publications and received significant recognition in terms of citations. With an h-index of 113, IITH has accumulated 111,151 citations, indicating the impact and influence of its research contributions. Furthermore, IITH's publications exhibit an average citation per paper of 14.163, highlighting its research output's high quality and relevance. These findings suggest that IITH has demonstrated exceptional research productivity, positioning it as the top-performing institution among the second-generation IITs from 2008 to 2022. The significant number of publications, high citation count, and impressive average citations per paper underscore IITH's notable contributions to the field and establish its reputation as a leading institution in research.
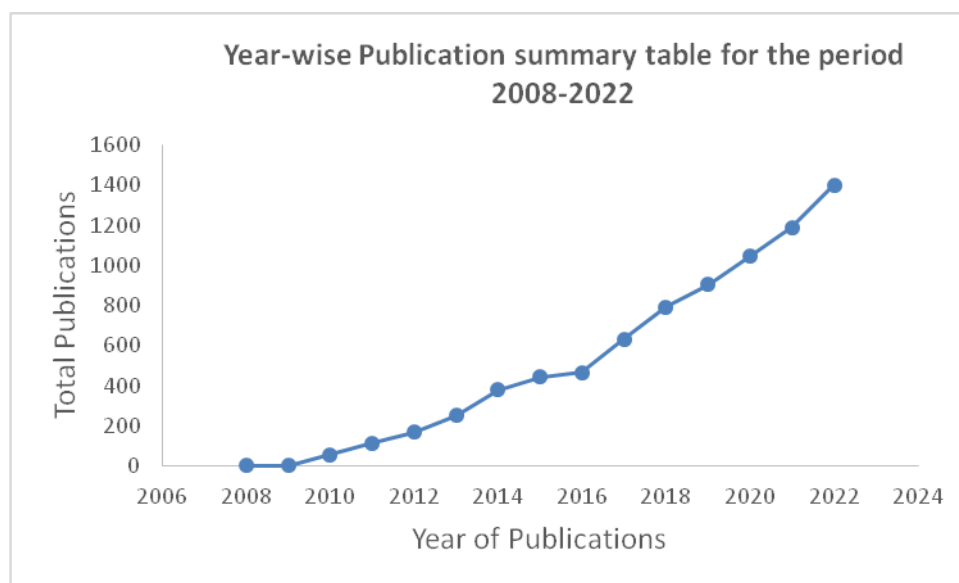

Figure 1: Year-wise Publication summary table for the period 2008-2022 of IITH

Figure 1. illustrates the distribution of publications from 2008 to 2022 by researchers affiliated with IIT Hyderabad (IITH). Throughout this period, researchers from IITH published a total of 7,848 documents. Mohammed Zafar Ali Khan's work "Achieving exponential diversity in ALL fading Channels" was published in 2008 as part of the 24th Biennial Symposium on Communications (BSC 2008). Analyzing the publication trend over the years, it becomes apparent that IITH consistently experienced growth in research output. The number of publications steadily increased from 2 in 2008 and 2009 to a peak of 1,400 in 2022. This substantial growth signifies the expanding research endeavors and productivity of IITH. Particularly noteworthy is the significant contribution of the last four years, namely 2019, 2020, 2021, and 2022, which collectively accounted for approximately 57% of IITH's total publications. This highlights a period of exceptionally high productivity and research output for the institution.

The data presented in Figure 1 indicates a clear upward trend in the publishing activities of IIT Hyderabad over the years. With many publications, especially in recent years, IITH consistently demonstrates its commitment to research excellence and productivity, solidifying its position as a leading institution in the academic community.

The publications in these years imply scholarly activity is very active and prove that the faculties are active members in their research areas and good research environment at IITH. The publications bring attention to their institution and speak about the competency of their faculty to carry science forward.
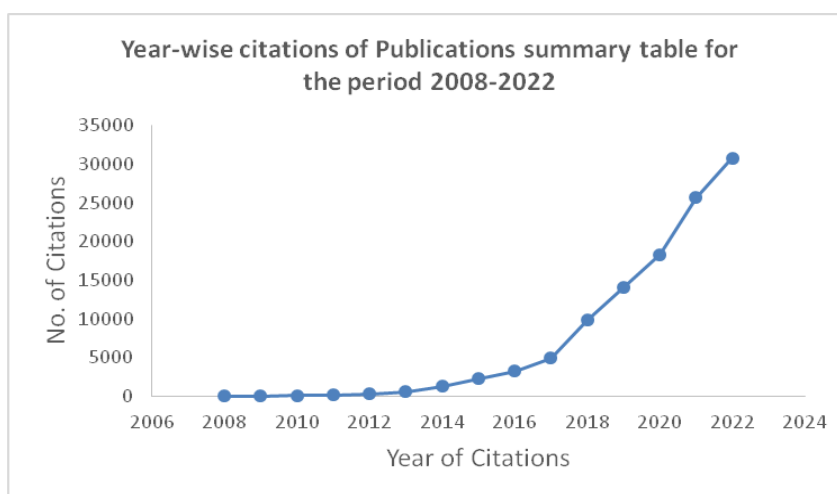

Figure 2: Year-wise citations of Publications summary table for the period 2008-2022 of IITH

Figure 2 illustrates the citation trends of scholarly publications from the beginning of 2008 to the end of 2022. The trajectory of citations received from academic sources initially exhibited a gradual incline starting in 2010. However, since 2019, this upward trend has become significantly pronounced. Notably, the lowest citation count occurred in 2008; the highest was recorded at 30,790 citations in 2022. Generally, the rise in sources mirrors the increase in articles, as observed in Figure 2. Over the years, the expanding volume of articles naturally leads to a more significant number of high-quality publications. Since the citation process requires time, with documents typically taking a few years to be cited, citations to articles will likely continue to increase.

Of the 7,848 documents, 6,383 (81%) received one or more citations, indicating that only 19% of the publications needed to be cited. The citation count indicates that their publications are accepted and appreciated well. Consequently, a total of 3,383 documents garnered a cumulative 124,125 citations. On average, each document received 37 citations. Moreover, a subset of 139 documents (1.77%) acquired more than 100 citations.
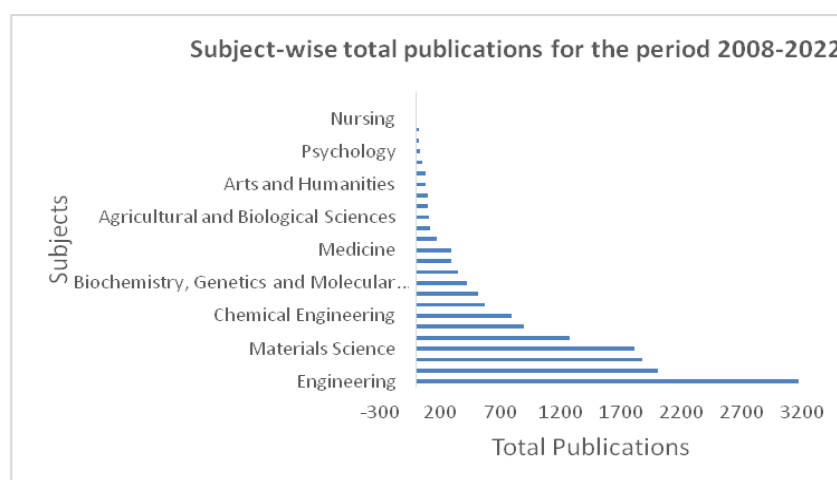

Figure 3: Subject-wise total publications of IITH for the period 2008-2022

Figure 3. presents the subject-wise distribution of total publications from 2008 to 2022 by IIT Hyderabad (IITH). The Scopus database categorizes scientific and technological knowledge into 27 main subject areas. The major subjects contributing to the overall publications are Engineering, Physics and Astronomy, Computer Science, Material Science, and Chemistry. These subjects reflect the diverse areas of research and academic expertise within IITH.

In addition to subject-wise analysis, Table 2. highlights the most productive journals and publications of IITH during the 2008-2022 period. The table reveals that 139 highly influential journals have contributed 3,546 articles. These articles account for 39% of the publications during the specified time frame.

Some of the notable journals in which IITH researchers have published their work include Physical Review D, Monthly Notices Of The Royal Astronomical Society, Lecture Notes In Computer Science Including Subseries Lecture Notes In Artificial Intelligence, And Lecture Notes In Bioinformatics, RSC Advances, Journal Of Alloys And Compounds, Astrophysical Journal, Lecture Notes In Civil Engineering, AIP Conference Proceedings, Physical Review Letters, Dalton Transactions, ACM International Conference Proceeding Series, Scientific Reports, and Electrochimica Acta.

The data in Figure 3 and Table 2 demonstrate the multidisciplinary nature of research at IITH, with solid contributions in engineering, physical sciences, computer science, material science, and chemistry. The extensive publication record in reputable journals signifies the high-quality research output and the significant impact of IITH in various fields of study. The research in the best productive journals has increased the visibility and credibility of researchers, thus the IITH Institute in its ranking. This helps the faculty to get grants.

Table 2: Best productive journals of IITH for the period 2008-2022

Source Title	IITH
Physical Review D	173
Monthly Notices Of The Royal Astronomical Society	115
Lecture Notes In Computer Science Including Subseries Lecture Notes In Artificial Intelligence And Lecture Notes In Bioinformatics	87
RSC Advances	67
Journal Of Alloys And Compounds	62
Astrophysical Journal	60
Lecture Notes In Civil Engineering	49
AIP Conference Proceedings	48
Physical Review Letters	44
Dalton Transactions	43
ACM International Conference Proceeding Series	42
Scientific Reports	42
Electrochimica Acta	39
Physics Of Fluids	37
Chemistryselect	36

Proceedings Of The Annual International Conference Of The IEEE Engineering In Medicine And Biology Society EMBS	36
Geotechnical Special Publication	35
New Journal Of Chemistry	35
Journal Of Applied Physics	34
European Physical Journal C	33
Journal Of High Energy Physics	33
Materials Letters	33
Materials Today Proceedings	33
Springer Proceedings In Physics	33
Journal Of The Electrochemical Society	31
Astrophysical Journal Letters	28
Physical Chemistry Chemical Physics	28
Journal Of Magnetism And Magnetic Materials	27
Proceedings IEEE International Symposium On Circuits And Systems	27
Optics Infobase Conference Papers	26
Smart Innovation Systems And Technologies	26
Ecs Transactions	25
Journal Of Chemical Sciences	25
Journal Of Materials Science Materials In Electronics	25
ACS Applied Materials And Interfaces	24
Chemical Engineering Journal	24
Composite Structures	24
Journal Of Energy Storage	24
Journal Of Materials In Civil Engineering	24
Journal Of Organic Chemistry	24
Lecture Notes In Mechanical Engineering	24
Journal Of Physical Chemistry B	23
Proceedings Of SPIE The International Society For Optical Engineering	23
Communications In Computer And Information Science	22
Journal Of Physical Chemistry C	22
Structures	22
ACS Omega	21
IEEE Access	21
IEEE International Symposium On Information Theory Proceedings	21
IEEE Sensors Journal	21
Journal Of Micromechanics And Microengineering	21
Leibniz International Proceedings In Informatics Lipics	21
Construction And Building Materials	20

Journal Of Physics Condensed Matter	20
Organic And Biomolecular Chemistry	20
Tetrahedron Letters	20
Ceramics International	19
European Journal Of Organic Chemistry	19
International Symposium On Advanced Networks And Telecommunication Systems Ants	19
Journal Of Cosmology And Astroparticle Physics	19
Sensors And Actuators B Chemical	19
Nanotechnology	18
Applied Physics Letters	17
Intermetallics	17
Materials Today Communications	17
IEEE Transactions On Industrial Electronics	16
IFAC Papersonline	16
Journal Of Fluid Mechanics	16
Journal Of Molecular Liquids	16
Metallurgical And Materials Transactions A Physical Metallurgy And Materials Science	16
Tetrahedron	16
ACS Applied Energy Materials	15
ICASSP IEEE International Conference On Acoustics Speech And Signal Processing Proceedings	15
IEEE Signal Processing Letters	15
IEEE Vehicular Technology Conference	15
Industrial And Engineering Chemistry Research	15
Inorganic Chemistry	15
Journal Of Organometallic Chemistry	15
Journal Of Physics Conference Series	15
Mechanics Of Advanced Materials And Structures	15
Fuel	14
Fuzzy Sets And Systems	14
International Journal Of Biological Macromolecules	14
Journal Of Cleaner Production	14
Journal Of Hazardous Toxic And Radioactive Waste	14
Materials Characterization	14
Materials Chemistry And Physics	14
Materials Science And Engineering A	14
Transactions Of The Indian Institute Of Metals	14
2019 11th International Conference On Communication Systems And Networks	13

Comsnets 2019	
Astrophysical Journal Supplement Series	13
Chemical Engineering Science	13
European Journal Of Mechanics B Fluids	13
International Journal Of Hydrogen Energy	13
Journal Of Computational And Nonlinear Dynamics	13
Journal Of Physics D Applied Physics	13
Journal Of Power Sources	13
Materials Science And Engineering C	13
Proceedings Of The Indian National Science Academy	13
Buletin Ekonomi Moneter Dan Perbankan	12
Engineering Structures	12
Indian Geotechnical Journal	12
Journal Of Molecular Structure	12
Journal Of Structural Engineering United States	12
Materials And Manufacturing Processes	12
Materials Research Express	12
Proceedings Of IEEE Sensors	12
Proceedings Of The International Joint Conference On Neural Networks	12
Synthesis Germany	12
Thin Walled Structures	12
Wireless Personal Communications	12
Zeitschrift Fur Anorganische Und Allgemeine Chemie	12
10th IEEE International Conference On Power Electronics Drives And Energy Systems Pedes 2022	11
2018 10th International Conference On Communication Systems And Networks Comsnets 2018	11
2019 6th Indian Control Conference Icc 2019 Proceedings	11
ACS Applied Bio Materials	11
ACS Applied Nano Materials	11
Advances In Intelligent Systems And Computing	11
Biosensors And Bioelectronics	11
Electroanalysis	11
Energy And Fuels	11
Journal Of Environmental Chemical Engineering	11
Journal Of Fluids Engineering Transactions Of The ASME	11
Journal Of Low Power Electronics	11
Journal Of Materials Research	11
Journal Of Solid State Chemistry	11

Nanoscale	11
Proceedings Of Science	11
Bulletin Of Materials Science	10
Chemphyschem	10
Economic Modelling	10
International Journal Of Multiphase Flow	10
Journal Of Constructional Steel Research	10
Journal Of Manufacturing Processes	10
Journal Of Materials Science	10
Materials Research Bulletin	10
Physical Review D Particles Fields Gravitation And Cosmology	10
Physical Review E Statistical Nonlinear And Soft Matter Physics	10
Proceedings Electronic Components And Technology Conference	10

Additionally, Table 3 highlights the 15 most cited papers from IITH during the same period. These papers have garnered considerable attention within the academic community, with citation ranges ranging from 571 to 5,813. Of these 15 articles, 15 had first authors from international institutions, indicating the importance of international collaborations in shaping research capabilities. The papers were published in esteemed journals such as Physical Review Letters, Astrophysical Journal Letters, Physical Review X, Nature, Physical Review D, and Proceedings of the 2018 IEEE Winter Conference on Applications of Computer Vision (WACV 2018).

The data in Tables 2 and 3 demonstrate the significant impact and recognition of IITH's research contributions in various scientific disciplines. The prominence of specific journals and highly cited papers reflects the institution's commitment to producing high-quality research and collaborating with international partners. These findings highlight the valuable role that IITH plays in advancing scientific knowledge and contributing to global research efforts.

Table 3: Fifteen most cited papers from IITs research output data (2008–2022)

Publication Year	Reference	Authors from IITH	Citations	Journal
2017	Abbott BP, Abbott R, Abbott T, Acernese F, Ackley K, Adams C, Adams T, Addesso P, Adhikari RX, Adya VB, Affeldt C. Physical review letters. 2017 Oct 16;119(16):161101.	Somala Surendra Nadh	5813	Physical Review Letters
2017	Abbott BP, Abbott R, Abbott TD, Acernese F, Ackley K, Adams C, Adams T, Addesso P, Adhikari RX, Adya VB, Affeldt C. The Astrophysical Journal Letters. 2017 Oct	Somala Surendra Nadh	2028	Astrophysical Journal Letters

	16;848(2):L13.			
2019	Abbott BP, Abbott R, Abbott T, Abraham S, Acernese F, Ackley K, Adams C, Adhikari RX, Adya VB, Affeldt C, Agathos M. Physical Review X. 2019 Sep 4;9(3):031040.	Somala Surendra Nadh	2021	Physical Review X
2017	Abbott BP, Abbott R, Abbott TD, Acernese F, Ackley K, Adams C, Adams T, Addesso P, Adhikari RX, Adya VB, Affeldt C. Physical review letters. 2017 Oct 6;119(14):141101.	Somala Surendra Nadh	1594	Physical Review Letters
2018	Abbott BP, Abbott R, Abbott TD, Acernese F, Ackley K, Adams C, Adams T, Addesso P, Adhikari RX, Adya VB, Affeldt C. Physical review letters. 2018 Oct 15;121(16):161101.	Somala Surendra Nadh	1230	Physical Review Letters
2018	Chattopadhay A, Sarkar A, Howlader P, Balasubramanian VN. In 2018 IEEE winter conference on applications of computer vision (WACV) 2018 Mar 12 (pp. 839-847). IEEE.	Balasubramani an, Vineeth Nallure, Aditya Chattopadhay, Anirban Sarkar	947	Proceedings - 2018 IEEE Winter Conference on Applications of Computer Vision, WACV 2018
2021	Abbott R, Abbott TD, Abraham S, Acernese F, Ackley K, Adams A, Adams C, Adhikari RX, Adya VB, Affeldt C, Agathos M. Physical Review X. 2021 Jun 9;11(2):021053.	Somala Surendra Nadh	931	Physical Review X
2017	Abbott BP, Abbott R, Abbott TD, Acernese F, Ackley K, Adams C, Adams T, Addesso P, Adhikari RX, Adya VB, Affeldt C. The Astrophysical Journal Letters. 2017 Dec 18;851(2):L35.	Somala Surendra Nadh	881	Astrophysical Journal Letters
2020	Abbott R, Abbott TD, Abraham S, Acernese F, Ackley K, Adams C, Adhikari RX, Adya VB, Affeldt C, Agathos M, Agatsuma K. The Astrophysical Journal Letters. 2020 Jun 20;896(2):L44.	Somala Surendra Nadh	844	Astrophysical Journal Letters

2020	Abbott BP, Abbott R, Abbott TD, Abraham S, Acernese F, Ackley K, Adams C, Adhikari RX, Adya VB, Affeldt C, Agathos M. The Astrophysical Journal. 2020 Mar 19;892(1):L3.	Somala Surendra Nadh	831	Astrophysical Journal Letters
2018	Abbott T.M.C., Abdalla F.B., Alarcon A., Aleksic J., Allam S., Allen S., Amara A., (...), (Dark Energy Survey Collaboration) (2018) Physical Review D, 98 (4)	S Desai	738	Physical Review D
2019	Abbott BP, Abbott R, Abbott TD, Acernese F, Ackley K, Adams C, Adams T, Addesso P, Adhikari RX, Adya VB, Affeldt C. Physical Review X. 2019 Jan 2;9(1):011001.	Somala Surendra Nadh	699	Physical Review X
2020	Abbott R, Abbott TD, Abraham S, Acernese F, Ackley K, Adams C, Adhikari RX, Adya VB, Affeldt C, Agathos M, Agatsuma K. Physical review letters. 2020 Sep 2;125(10):101102.	Somala Surendra Nadh	662	Physical Review Letters
2017	DLT40 Collaboration Haislip JB 241 Kouprianov VV 241 Reichart DE 241 Tartaglia L. 242 243 Sand DJ 242 Valenti S. 243 Yang S. 243 244 245 and Las Cumbres Observatory Collaboration Arcavi Iair 246 247 Hosseinzadeh Griffin 246 247 Howell D. Andrew 246 247 McCully Curtis 246 247 Poznanski Dovi 248 Vasylyev Sergiy 246 247, 2017. *Nature*, *551*(7678), pp.85-88.	Somala Surendra Nadh	648	Nature
2017	Cowperthwaite PS, Berger E, Villar VA, Metzger BD, Nicholl M, Chornock R, Blanchard PK, Fong WF, Margutti R, Soares-Santos M, Alexander KD. The Astrophysical Journal Letters. 2017 Oct 16;848(2):L17.	S Desai	571	Astrophysical Journal Letters

Table 4: Top Fifty authors based on their h-Index

Name	Scopus ID	Documents	Citations	Co-authors	Department	h-Index
Desai Shantanu	56506326400	553	35579	7919	Physics	89
Ghosh Saranya Samik	55547103616	668	26807	11935	Physics	76
Madras G	7005905149	580	23410	353	Chemical Engineering	73
Murty Budaraju Srinivasa	35551753500	459	16868	504	MSME	63
Somala Surendra Nadh	26768331200	145	27346	5879	Civil Engineering	51
Sandilya Saurabh	56985930800	285	8521	3232	Physics	43
Deepa Melepurath	6701776259	217	5566	213	Chemistry	42
Subrahmanyam Challapalli	57197411118	197	5091	234	Chemistry	39
Janaki Ram G D	6505992338	114	4402	151	MSME	38
Eswaran Vinayak	7003783046	144	4219	120	Mechanical and Aerospace Engineering	37
Sudarsanam Putla	36242259000	86	3865	133	Chemistry	36
Badhulika Sushmee	37028044200	201	4821	150	Electrical Engineering	36
Kurra Narendra	35758727100	56	5084	112	Chemistry	34
Subramaniam Kolluru V L	7005184206	156	3388	109	Civil Engineering	34
Giri Anjan Kumar	7102961266	260	4503	3981	Physics	34
Kanchana Venkatakrishnana	6602687276	137	3003	196	Physics	31
Sahu Kirti Chandra	23390090300	128	2904	109	Chemical Engineering	30
Sharma Chandra Shekhar	55890374500	167	2946	226	Chemical Engineering	30
Vaidyanathan Sivakumar	23471432800	108	2542	106	Chemistry	30
Bhattacharjee Pinaki Prasad	57203218300	112	3700	109	MSME	30
Panda Tarun K	7006104344	150	2799	145	Chemistry	29
Kumar Rahul	57205705447	56	3027	489	Biotechnology	28
Mitra Kishalay	7007039078	148	2034	88	Chemical Engineering	28
Rao Kotagiri Venkata	7404812655	44	2348	83	Chemistry	28
Singh Shiv Govind	35185722200	266	3082	311	Electrical Engineering	28
Maji Somnath	67017459	56	1923	110	Chemistry	27

	87					
Martha Surendra Kumar	6507803859	110	3183	193	Chemistry	27
Asthana Saket	7006820783	115	2050	143	Physics	27
Natte Kishore	37661982500	60	2360	92	Chemistry	26
Mahata Arup	56070949200	59	1998	148	Chemistry	26
Krishna Mohan Chalavadi	55325461200	79	1708	62	Computer Science Engineering	26
Sahu Narendra	7006765828	85	1784	2045	Physics	26
Srivastava Yogesh Kumar	57008818500	47	2279	71	Physics	26
Keerthipati Sivakumar	55568512260	99	1962	56	Electrical Engineering	25
Rath Subha Narayan	56224120000	62	1443	145	Biomedical Engineering	24
Satyanarayana Gedu	9940250900	129	1985	81	Chemistry	24
Singh Saurabh Kumar	55677088480	55	1667	172	Chemistry	24
Saride Sireesh	20436548600	99	1891	61	Civil Engineering	24
Reddy NV	57205336583	65	2771	79	Mechanical and Aerospace Engineering	24
Pal Prem	7102063163	109	1647	95	Physics	23
John Renu	57201703336	88	2566	125	Biomedical Engineering	22
Khan Faizahmed Ahmed	7402008295	108	2317	70	Chemistry	22
Chakraborty Priyadarshi	55509041000	39	1294	69	Chemistry	22
Rathinasamy Maheswaran	57194206548	56	1447	72	Civil Engineering	22
Balasubramanian Vineeth Nallure	17344969900	139	2538	325	Computer Science Engineering	22
Acharyya Amit	26326176500	181	1840	262	Electrical Engineering	22
Bhattacharya Saswata	55451791900	88	1800	229	MSME	22
Deshpande Atul Suresh	7202168312	44	1645	74	MSME	22
Jayaram Balasubramanian	16402196900	83	1612	28	Mathematics	22
Raavi Sai Santosh Kumar	57214464253	110	2290	236	Physics	22

In the field of Science, Desai Shantanu holds the highest h-index of 89, making him the most influential researcher in Physics. He is followed by Ghosh Saranya Samik (h-index 76), Sandilya Saurabh (h-index 43), Giri Anjan Kumar

(h-index 34), Kanchana Venkatakrishnan (h-index 31), Asthana Saket (h-index 27), Sahu Narendra (h-index 26), Srivastava Yogesh Kumar (h-index 26), Pal Prem (h-index 23), and Raavi Sai Santhosh Kumar (h-index 22).

Within the field of Chemistry, Deepa Melepurath stands out as the most prolific author, with an h-index of 42. Subrahmanyam Challapalli follows closely with an h-index of 39, Sudarsanam Putla with an h-index of 36, Kurra Narendra with an h-index of 34, and Vaidyanathan Sivakumar with an h-index of 30. Other notable contributors include Panda Tarun K (h-index 29), Rao Kotagiri Venkata (h-index 28), Maji Somnath (h-index 27), Martha Surendra Kumar (h-index 27), Mahata Arup (h-index 26), Natte Kishore (h-index 26), Satyanarayana Gedu (h-index 24), Singh Saurabh Kumar (h-index 24), Khan Faiz Ahmed (h-index 22), and Chakraborty Priyadarshi (h-index 22). Jayaram Balasubramaniam holds the top position in Mathematics with an h-index of 22.

In Engineering, Madras G leads in Chemical Engineering with an h-index of 73. Sahu Kirti Chandra and Sharma Chandra Shekar have an h-index of 30, while Mitra Kishalay has an h-index of 28.
Within Material Science and Metallurgical Engineering, Murty Budaraju Srinivasa has the highest h-index 63. Janaki Ram G D follows with an h-index of 38, Bhattacharjee Pinaki Prasad with an h-index of 30, and Bhattacharya Saswata and Deshpande Atul Suresh both with an h-index of 22.

In Civil Engineering, Somala Surendra Nadh holds the top h-index of 51, followed by Subramaniam Kolluru V L with an h-index of 34, Saride Sireesh with an h-index of 24, and Rathinasamy Maheswaran with an h-index of 22. Eswaran Vinayak stands out in Mechanical Engineering with an h-index of 37, followed by Reddy NV with an h-index of 24.

Within Electrical Engineering, Badhulika Sushmee leads with an h-index of 36, Singh Shiv Govind follows with an h-index of 28, Keerthipati Sivakumar with an h-index of 25, and Acharyya Amit with an h-index of 22.
In Biotechnology, Kumar Rahul holds the top h-index of 26.
Krishna Mohan Chalavadi is the leading researcher in Computer Science Engineering with an h-index of 26, followed by Balasubramanian Vineeth Nallure with an h-index of 22.
In Biomedical Engineering, Rath Subha Narayan stands out with an h-index of 24, closely followed by John Renu with an h-index of 22.

Table 5: Department-wise details.

Department	Total no of Regular Faculty	Publications	SRCP	Project Funding (Crores)
Artificial Intelligence	03	07	01	0.5
Biomedical Engineering	11	295	61	49
Biotechnology	14	150	38	15
Chemical Engineering	23	715	91	35
Chemistry	25	947	99	41
Design	10	48	10	13
Civil Engineering	27	930	1139	120
Computer Science and Engineering	25	759	149	72

Electrical Engineering	32	1690	224	373
Liberal Arts	20	306	36	10
Material Science and Metallurgical Engineering	20	554	85	56
Mathematics	22	240	20	2
Mechanical and Aerospace Engineering	34	673	176	68
Physics	28	1294	77	25
Entrepreneurship and Management	05	09	01	0.06

SRCP: **Sponsored Research Consultancy Projects**

Source: IITH Brochure 2023

From Table 5, the Physics department, comprising 28 faculty members, has produced substantial scholarly work, amounting to 1294 publications with project funding of 41 crores. Following closely, the Chemistry department, with 25 faculty members, has contributed 947 publications with project funding of 25 crores. In contrast, with 22 faculty members, the Mathematics department has generated 240 publications with project funding of 2 crores.

The Electrical Engineering department, 32 faculty members, have authored 1690 publications with a project funding of 373 crores. This is followed by Civil Engineering, with 27 faculty members, which has authored 930 publications with a project funding of 120 crores. The Computer Science and Engineering department, with 25 faculty members, has produced 759 publications with a project funding of 72 crores. The Chemical Engineering department has 23 faculty members contributing 715 publications with a project funding of 35 crores. The Mechanical and Aerospace Engineering department, with 34 faculty members, has contributed 673 publications with project funding of 68 crores. Material Science and Metallurgical Engineering, consisting of 20 faculty members, has produced 554 publications with a project funding of 56 crores. Biomedical Engineering, comprising 11 faculty members, has contributed 295 publications with a project funding of 49 crores, while Biotechnology, with 14 faculty members, has generated 150 publications with a project funding of 15 crores. Lastly, Artificial Engineering, supported by three faculty members, has contributed seven publications with project funding of 0.5 crores.

In the design field, 48 publications have been authored by a faculty of 10 members with a project funding of 13 crores. Within the discipline of Liberal Arts, faculty of 20 members has contributed 306 publications with project funding of 10 crores. The Entrepreneurship and Management field, represented by five faculty members, has produced nine publications with project funding of 0.06 crores.

CONCLUSION

Analyzing IIT Hyderabad's scholarly publications from 2008 to 2022 demonstrates the institution's impressive research achievements and substantial contributions across diverse fields. The data underscores IIT Hyderabad's unwavering commitment to research excellence, evident in the wide-ranging publication records of faculty members in departments such as Physics, Chemistry, Electrical Engineering, Civil Engineering, and Computer Science and Engineering. These departments consistently produce high-quality research outcomes and secure noteworthy project funding, establishing IIT Hyderabad as a projecting knowledge creation and innovation center.

IIT Hyderabad embraces an interdisciplinary approach in its research endeavors, encompassing artificial intelligence, biotechnology, design, liberal arts, material science, and mathematics. This collaborative mindset nurtures partnerships and enhances the research ecosystem within the institution. The outstanding accomplishments of individual researchers, such as Desai Shantanu and Deepa M., exemplify the scholarly prowess and expertise of IITH's esteemed faculty community, further supplementing the institution's position as a leading hub for cutting-edge research and innovation. Through this analysis, it becomes evident that IIT Hyderabad is devoted to upholding research excellence, fostering multidisciplinary collaborations, and making precious contributions to advancing scientific knowledge and solving real-world challenges.

With its dynamic research ecosystem, eminent faculty, and remarkable research outputs, IIT Hyderabad continues to play a pivotal role in shaping the future of scientific discovery and driving positive societal impact.

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