

# Scientometric Portrait of Physicist Prof. Ajay Kumar Sood Dr. Lohrii Kaini Mahemei

Deputy Librarian, Delhi University Library System, University of Delhi, Delhi, India  
*kaini12@gmail.com*

## ABSTRACT

*The author attempts to present the research contributions of Professor Ajay Kumar Sood, Department of Physics, Indian Institute of Science (IISc), Bengaluru, India. Presently he is the Principal Scientific Adviser to the Government of India. The study analyses the research publications indexed in the Scopus bibliographic database from 1979-2024. He published 518 research papers and received 25378 citations. His h-index is 65. He has 8 patents (up to 2013). 98.6% of his research publications were multi-authored and have received 99.3% citations, indicating a high degree of research collaboration. The study revealed that 2012 was a productive year, with 26 research articles. Muthu, D.V.S with 91 publications, was the most collaborative author, and the USA with 31.7% was the most collaborating foreign country.*

**KEYWORDS:** Scientometric study, Prof A K Sood, Indian Institute of Science, Physics, Bibliometric study, Research contributions.

## INTRODUCTION

Tague-Sutcliffe (1992) stated, "Scientometrics is a study of the quantitative aspects of science as a discipline or economic activity. It is part of the sociology of science and has application to science policy-making. It involves quantitative studies of scientific activities, including, among others, publication, and so overlaps bibliometrics to some extent."

Scientists play an important role in the advancement of science as information creators. Scientific research productivity provides the basis for measuring the impact of publications of a scientist, an institution and also a nation. The study of the scholarly communication of eminent scientists and the impact of their scientific research provides insight into a discipline, which can emulate young scholars. The present study attempts to analyse the scientific publications, the pattern of authorship network, collaborative countries, preferred for scholarly communication, and the impact of research publications of Ajay K Sood, Professor of Physics, Indian Institute of Science (IISc), Bengaluru, India.

## **BRIEF BIOGRAPHICAL SKETCH OF PROF A. K SOOD**

Ajay K Sood was born on June 26, 1951. He graduated in Physics from Punjab University, Chandigarh, India in 1971. He received Masters and PhD degrees from Punjab University in 1972 and from IISc, Bangalore in 1982, respectively. He completed Post-Doctoral research at Max-Planck Institute in Stuttgart, Germany 1983-85. Prior to joining IISc, Dr Sood was posted as a Scientist at the Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam, India. He joined the IISc as an Assistant Professor in 1988 and became a Professor in 1994. Prof. Sood was the Divisional Chairman, of the Division of Physical and Mathematical Sciences, IISc for a decade from 1998-2008. His research interests include Graphene, nanotubes, Nonlinear optical properties, Topological Insulators, soft condensed matter, etc. He has published 518 research articles and has guided more than 50 students in their PhD degree.

Prof. Sood has held several academic positions in both National and International Universities and Institutes and has been a recipient of several prestigious awards including the “*Padma Shri*” (2013), Sir C. V Raman Award, Bangalore Nano award, Vigyan Ratan, etc. A list of awards and honours is given in the Appendix.

## **LITERATURE REVIEW**

There are innumerable studies of research productivity, research contributions, research output, etc of a country, institutes and individuals. The “Scientometric portrait” is a term used for studying the bio-bibliometric of an individual scientist, first coined by Kalyane and Kalyane (1993). There are several scientometric studies undertaken of Nobel Laureates and Eminent Scholars in various disciplines including Amartya Sen, C. V Raman, Harold W. Kroto, S. Chandrasekhar, K.S Krishnan, Prof Dipankar Das Sarma, Prof. Anurag Kumar, Prof. P Balaram, P.M Bhargava, Professor Mahalanobis, Atul H Chokshi, Khoo Kay Kim, G. Thanikaimoni, Mike Thelwall, T. S West, M. L Kachroo. Prof. M. Santappa, etc.

## **OBJECTIVES OF THE STUDY**

The main aim and objectives of the present study are:

- ✓ To illustrate the preferred document types and chronology of publication productivity;
- ✓ To identify the author pattern of papers;
- ✓ To assess core authors, country and institution collaborating with Prof. A K Sood;
- ✓ To analyse the core journals used for research publications;
- ✓ To identify the most cited papers;
- ✓ To find out the frequency of keywords used in the article title.

## **METHODOLOGY**

The bibliographic data of the scientific research papers and the citations of Prof. A.K Sood for the study was extracted from 1979 to 2024 (till October 22, 2024) from the Scopus database. Using an author search string where all the various terms such as “Sood, Ajay Kumar; Sood, Ajay; Sood, A; and Sood, Ajay K” and AU-ID (“Sood, Ajay Kumar” 7201450997) were retrieved. A total of 518 bibliographic records of different document types were exported in CSV Excel. All the data was further compiled and analysed as per the objectives framed for the study.

Data were retrieved in October 2024. VOSview open software is used to visualize bibliometric networks of search results.

**DATA ANALYSIS**

Data interpretation was carried out on the retrieved dataset using various scientometric tools as given below:

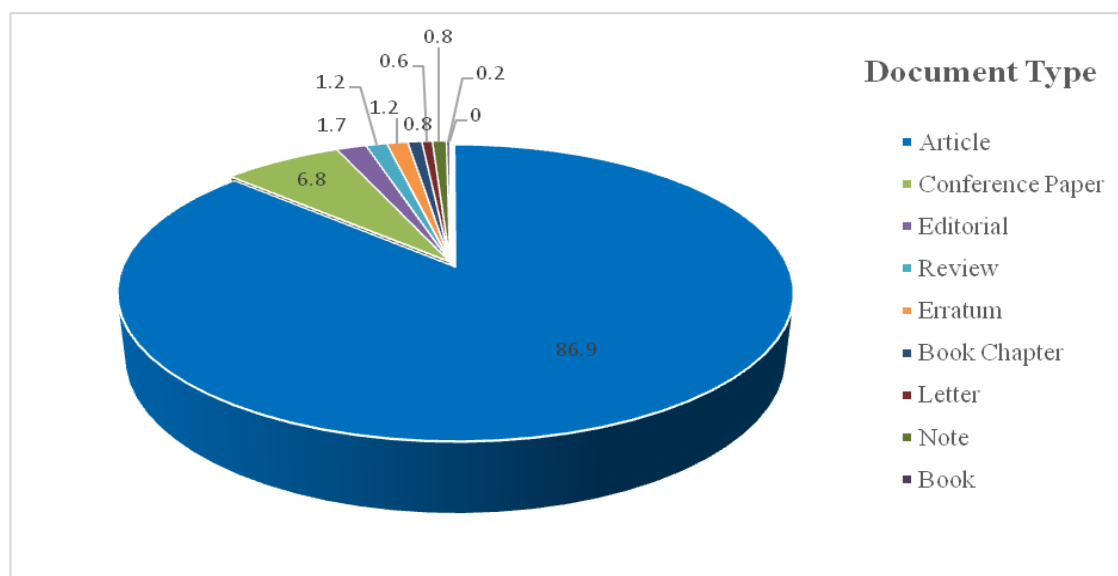
**Types of Document Publications**

**Table-1.** Preferred Document Types for Research Publishing

Document Type	No of Publications	Percentage	No of Citations	Percentage
Article	450	86.9	20043	79
Conference Paper	35	6.8	942	3.7
Editorial	9	1.7	48	0.2
Review	6	1.2	3938	15.5
Erratum	6	1.2	4	0
Book Chapter	4	0.8	5	0
Letter	3	0.6	195	0.8
Note	4	0.8	52	0.2
Book	1	0.2	151	0.6
<b>Total</b>	<b>518</b>	<b>100</b>	<b>25378</b>	<b>100</b>

Prof. Sood has published 518 research publications in various literary forms from 1979 to 2024. It is visible that “Research Article” with 450 is the most preferred format by Prof. A K Sood for publishing his research findings. As shown in Table-1, journal articles also have the maximum citations (79%) as compared to the rest of the other document types, followed by “Review” with 15.5%.

**TYPES OF DOCUMENT CONTRIBUTED BY PROF. A.K SOOD**



**Figure-1:** Types of Document contributed by Prof. A K Sood

## **Scientometric Portrait of Physicist Prof. Ajay Kumar Sood**

Figure-1 revealed that Prof. Sood preferred to publish in the “Research Article” category with 86.9%, followed by “Conference Paper” with 6.8%. It can be said that the category “Research Article”, with 86.9%, is the most preferred form for communicating his research findings, while the rest of the other categories combined are only 13.3%.

### **Chronological Research Productivity**

**Table-2.** Chronological Research Productivity and Citations of Prof. A. K Sood

<b>Year</b>	<b>TNP</b>	<b>CNP</b>	<b>NCR</b>	<b>CNC</b>	<b>PA</b>	<b>Age</b>	<b>ACP</b>
1979	1	1	9	9	1	28	9
1981	4	5	60	69	2	30	15
1983	2	7	10	79	3	32	5
1984	7	14	55	134	4	33	7.9
1985	11	25	1013	1147	5	34	92.1
1986	4	29	48	1195	6	35	12
1987	5	34	108	1303	7	36	21.6
1988	10	44	253	1556	8	37	25.3
1989	6	50	78	1634	9	38	13
1990	7	57	346	1980	10	39	49.4
1991	3	60	197	2177	11	40	65.7
1992	9	69	290	2467	12	41	32.2
1993	3	72	72	2539	13	42	24
1994	13	85	308	2847	14	43	23.7
1995	11	96	259	3106	15	44	23.5
1996	9	105	302	3408	16	45	33.6
1997	7	112	393	3801	17	46	56.1
1998	8	120	101	3902	18	47	12.6
1999	4	124	117	4019	19	48	29.3
2000	9	133	514	4533	20	49	57.1
2001	8	141	392	4925	21	50	49
2002	14	155	417	5342	22	51	29.8
2003	9	164	906	6248	23	52	100.7
2004	13	177	464	6712	24	53	35.7
2005	17	194	495	7207	25	54	29.1
2006	19	213	458	7665	26	55	24.1
2007	22	235	581	8246	27	56	26.4
2008	19	254	4234	12480	28	57	222.8
2009	20	274	5077	17557	29	58	253.9
2010	21	295	920	18477	30	59	43.8
2011	21	316	483	18960	31	60	23

2012	26	342	1466	20426	32	61	56.4
2013	16	358	863	21289	33	62	53.9
2014	18	376	1114	22403	34	63	61.9
2015	12	388	659	23062	35	64	54.9
2016	20	408	869	23931	36	65	43.5
2017	10	418	240	24171	37	66	24
2018	11	429	245	24416	38	67	22.3
2019	10	439	153	24569	39	68	15.3
2020	23	462	357	24926	40	69	15.5
2021	18	480	287	25213	41	70	15.9
2022	14	494	77	25290	42	71	5.5
2023	15	509	78	25368	43	72	5.2
2024	9	518	10	25378	44	73	1.1
<b>Total</b>	<b>518</b>	<b>9281</b>	<b>25378</b>	<b>466166</b>			

“TNP=Total Number of Publications; CNP=Cumulative Number of Publications; NCR=Number of Citations Received; CNC=Cumulative Number of Citations; PA=Productive Age; Age=Actual age; ACP=Average Citations per Publication”

Table-2 shows the chronological research productivity and citations of Prof. A K Sood spread over 44 years (1979-2024) and has published 518 publications. In 1979, at the age of 28, he published his first paper titled “Model for infrared and Raman studies of molecular rotations in liquids and gases” in “*Pramana*”. Prof. Sood’s productive years were 2012 with 26 research articles, followed by 2020 with 23 research papers. His highest research contribution was at the age of 61 in the year 2012 with 26 publications and received 5.8% citations. The highest average citations received per publication is 253.9 at the age of 58.

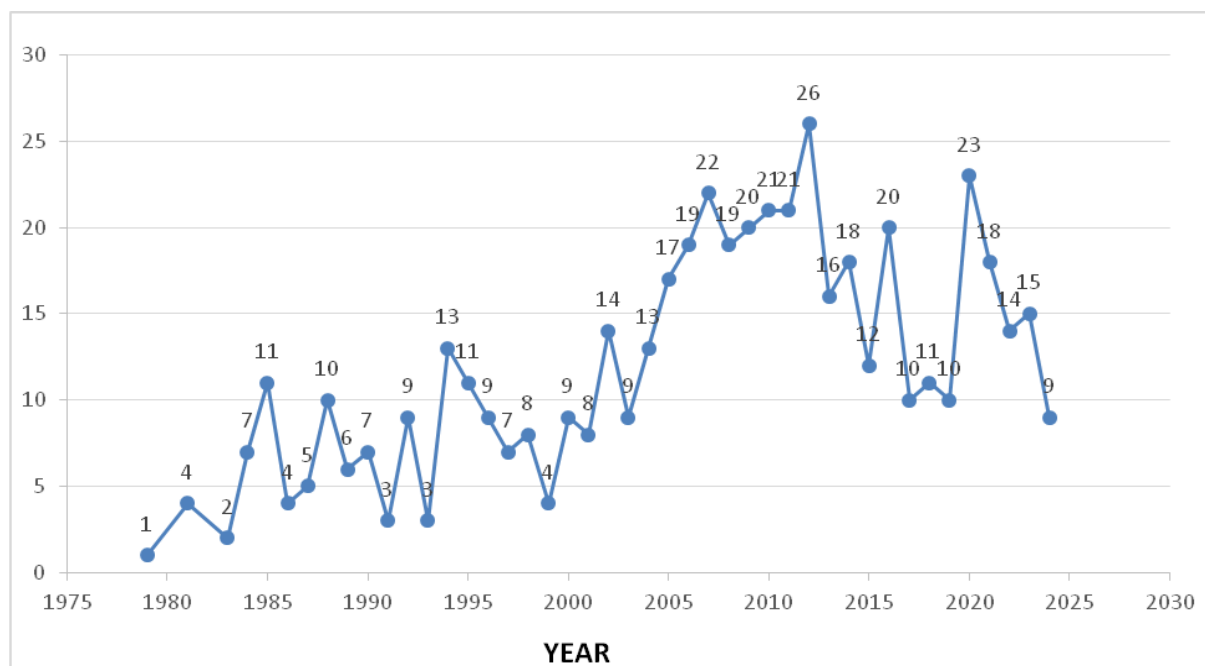


Figure-2: Research Output of Prof. Sood

## Scientometric Portrait of Physicist Prof. Ajay Kumar Sood

Figure-2 highlights a total number of 518 research contributions of Prof. Sood during the study period from 1979-2024. The year 2012, with 26 scientific papers was the most productive and the least was in 1979 with a single research paper.

### Authorship Pattern

Table-3. Authorship Pattern

No. of Authors	TNP	%	TNA	%	NCR	%
1 Author	7	1.4	7	0.1	186	0.7
2 Authors	53	10.2	60	0.7	940	3.7
3 Authors	84	16.2	144	1.6	3158	12.4
4 Authors	118	22.8	262	3	8839	34.8
5 Authors	78	15.1	340	3.9	2046	8.1
6 Authors	68	13.1	408	4.7	3546	14
7 Authors	39	7.5	447	5.1	1821	7.2
8 Authors	19	3.7	466	5.3	561	2.2
9 Authors	19	3.7	485	5.5	244	1
10 Authors	12	2.3	497	5.7	296	1.2
11 Authors	10	1.9	507	5.8	3413	13.4
12 Authors	2	0.4	509	5.8	80	0.3
13 Authors	1	0.2	510	5.8	31	0.1
14 Authors	1	0.2	511	5.8	97	0.4
16 Authors	1	0.2	512	5.8	11	0
29 Authors	1	0.2	513	5.9	2	0
32 Authors	1	0.2	514	5.9	1	0
36 Authors	1	0.2	515	5.9	0	0
44 Authors	1	0.2	516	5.9	36	0.1
57 Authors	1	0.2	517	5.9	6	0
81 Authors	1	0.2	519	5.9	64	0.3
<b>Total</b>	<b>518</b>	<b>100</b>	<b>8759</b>	<b>100</b>	<b>25378</b>	<b>100</b>

“TNP=Total Number of Publications; TNA=Total Number of Authors; NCR=Number of Citations Received”

Table-3 examines the authorship pattern of Prof. Sood. Out of the 518 publications, he had single-authored 7 (1.4%) research articles. Four-authored constitute 118 (22.8%) of the total research publications, followed by three-authored with 84 (16.2%) and five-authored with 78 (15.1%) publications. The highest maximum number of citations received was by four-authored 34.8%, followed by eleven-authored 13.4%, and closely followed by three-authored and five-authored with 12.4% and 8.1%, respectively.

Prominent Collaborators

Table-4. Prominent Author Collaborators

Sl.No	Author name	Publications	Citations	FPY	LPY	Total Years
Mentor	Sood, A K	518	25378	1979	2024	46
1	Muthu, D.V.S	91	2731	1992	2024	33
2	Rao, C.N.R	59	7217	1989	2015	27
3	Ganapathy, Rajesh	38	1066	2006	2024	19
4	Waghmare, U.V	36	4710	2007	2024	18
5	Maiti, Prabal K	22	1279	2006	2023	18
5	Das, Anindya	22	5118	2005	2024	20
6	Singh, Surjeet	21	310	2008	2024	17
7	Vasu, K.S	20	1033	2009	2018	10
7	Krishnaswamy, Rema	20	419	2003	2021	19
7	Kumar, Sunil	20	460	2007	2014	8
8	Kamaraju, N	17	499	2005	2011	7
8	Dasgupta, Chandan	17	624	2004	2023	20
9	Ramaswamy, Sriram	16	642	1992	2022	31
10	Chandrabhas, N	15	650	1990	2004	15

“FPY=First Publication Year; LPY=Last Publication Year”

Table-4 provides the names and contributions of the ten most collaborating authors. Out of the 518 publications from 1979-2024, Prof. Sood has published 414 (79.9%) with the top ten most prominent collaborators and received 26758 citations. He has published a maximum of research papers (91) with Muthu, D V S, followed by Rao, C N R, Ganapathy, Rajesh and Waghmare, U V with 59, 38 and 36 research papers. His collaboration with C N R Rao, with 59 publications, has received the highest number of citations (7217).

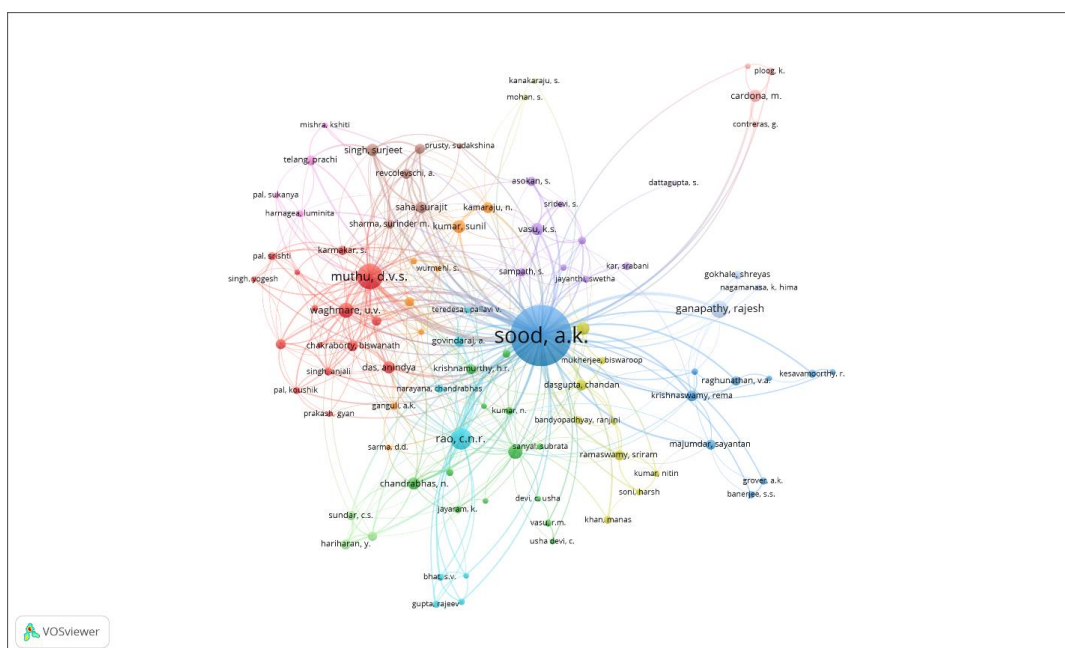


Figure-3: Prof. A K Sood Authorship Network

## Scientometric Portrait of Physicist Prof. Ajay Kumar Sood

Figure-3 shows the authorship network of Prof A K Sood wherein Muthu, D V S (91) has collaborated the highest research work with Prof. Sood as shown by a larger visual image.

### Country Collaboration

Table-5. Collaborating Countries

Sl. No	Country	No. of Papers	Percentage	No. of Citations	Percentage
1	USA	60	27.9	1705	17.7
2	Germany	35	16.3	1423	14.7
3	France	31	14.4	879	9.1
4	UK	14	6.5	4234	43.8
5	Japan	13	6.0	258	2.7
6	South Korea	8	3.7	229	2.4
7	Switzerland	5	2.3	77	0.8
8	China	4	1.9	101	1.0
9	Austria	4	1.9	56	0.6
10	Israel	4	1.9	45	0.5
11	Italy	4	1.9	41	0.4
12	Netherlands	4	1.9	13	0.1
13	Spain	3	1.4	97	1.0
14	Russia Federation	2	0.9	14	0.1
15	Slovenia	2	0.9	44	0.5
16	Argentina	2	0.9	2	0.0
17	Canada	2	0.9	22	0.2
18	Taiwan	2	0.9	89	0.9
19	West Germany	2	0.9	0	0.0
20	Hong Kong	2	0.9	6	0.1
21	Australia	1	0.5	64	0.7
22	Belgium	1	0.5	9	0.1
23	Brazil	1	0.5	1	0.0
24	Czech Republic	1	0.5	12	0.1
25	Denmark	1	0.5	4	0.0
26	Ecuador	1	0.5	14	0.1
27	Greece	1	0.5	6	0.1
28	Ireland	1	0.5	64	0.7
29	Singapore	1	0.5	9	0.1
30	Slovakia	1	0.5	12	0.1
31	Sweden	1	0.5	64	0.7
32	Armenia	1	0.5	64	0.7
	<b>Total</b>	215	100	9658	100





Table-6 reveals that Prof. Sood has collaborated extensively with scientists from “Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR)” in India and published 213 (49.5%) research papers, followed by “Indian Institute of Science Education and Research (IISER)” with 29 (6.7%) published papers and closely followed by “Indira Gandhi Centre for Atomic Research (IGCAR)” also from India with 27 (6.3%) publications. He has published 430 (83%) research papers with the top ten collaborating institutions, and these papers accounted for 22817 (89.9%) citations.

**Core Journal Preference**

**Table-7.** Journal Preference

R	Journal	Country	TNP	NCR	ACP	SJR (2023)
1	“Physical Review B”	USA	73	3249	44.5	1.345
2	“Physical Review Letters”	USA	26	2005	77.1	3.040
3	“Solid State Communications”	UK	24	547	22.8	0.414
4	“Physical Review E”	USA	23	439	19.1	0.805
5	“Pramana - Journal of Physics”	India	22	255	11.6	0.382
6	“Journal of Physics Condensed Matter”	UK	18	285	15.8	0.676
7	“Applied Physics Letters”	USA	13	511	39.3	0.976
8	“Chemical Physics Letters”	Netherlands	13	616	47.4	0.502
9	“Langmuir”	USA	12	243	20.3	0.825
10	“Journal of Applied Physics”	USA	11	352	32	0.681

“R=Rank; TNP=Total Number of Publications; NCR=Number of Citations Received; ACP=Average Citations per Publication; SJR=SCImago Journal Rank”

Table-7 lists the top ten most preferred journals of Prof. A K Sood having at least eleven or more publications ranked in the journal with the maximum number of papers. He has published research publications in 110 different journals. The “Physical Review B” ranked 1<sup>st</sup> with 73 papers (ACP 44.5%), followed by “Physical Review Letters” and “Solid State Communications” with 26 and 24 research papers, respectively. The journal “Physical Review Letters” published in the USA, has the highest SJR rankings with an SJR of 3.040 and has received 2005 citations, and the average number of citations per paper is 77.1%.

**Most Cited Research Publications**

**Table-8.** Most Cited Research Publications

R	Title	Year	Source	TC	DT
1	“Graphene: The new two-dimensional nanomaterial”	2009	“Angewandte Chemie - International Edition”	3747	Review
2	“Monitoring dopants by Raman scattering in an electrochemically top-gated graphene transistor”	2008	“Nature Nanotechnology”	3176	Article
3	“Symmetry-dependent phonon renormalization in monolayer MoS 2 transistor”	2012	“Physical Review B - Condensed Matter and Materials Physics”	911	Article

4	“Carbon nanotube flow sensors”	2003	“ <i>Science</i> ”	727	Article
5	“Raman spectroscopy of graphene on different substrates and influence of defects”	2008	“ <i>Bulletin of Materials Science</i> ”	577	Conference paper
6	“Graphene oxide-MnFe <sub>2</sub> O <sub>4</sub> magnetic nanohybrids for efficient removal of lead and arsenic from water”	2014	“ <i>ACS Applied Materials and Interfaces</i> ”	508	Article
7	“Binding of DNA nucleobases and nucleosides with graphene”	2009	“ <i>ChemPhysChem</i> ”	493	Article
8	“Resonance Raman scattering by confined LO and TO phonons in GaAs-AlAs superlattices”	1985	“ <i>Physical Review Letters</i> ”	444	Article
9	“Layer-dependent resonant Raman scattering of a few layer MoS <sub>2</sub> ”	2013	“ <i>Journal of Raman Spectroscopy</i> ”	405	Article
10	“Some novel attributes of graphene”	2010	<i>Journal of Physical Chemistry Letters</i> ”	402	Article

“R=Rank; TC=Total Citations; TD=Types of Document”

A total of 518 publications were studied and ranked based on their citations as shown in Table-8. The top ten most cited research publications (8 articles, 1 Conference Paper and 1 review) have received 11390 citations (44.9%). The review article titled “Graphene: The new two-dimensional nanomaterial” received the maximum citations (14.8%) followed by an article titled “Monitoring dopants by Raman scattering in an electrochemically top-gated graphene transistor” with 12.5% citations.

### Keywords in the Titles

**Table-9.** High-Frequency Keywords in the Titles

Keywords	Frequency	Keywords	Frequency
Raman	78	Pyrochlore	17
Graphene	50	Carbon nanotube	16
Phonon	45	Phase transitions	16
Carbon nanotubes	44	Electron	15
Pressure induced	35	Resonance	15
Colloidal	30	Glass	14
Raman-scattering	26	Raman spectroscopy	14
Temperature dependent	21	Single walled	14
X-Ray	21	First principles	13
Spectroscopy	20	Water	13
Phase transition	19	Colloidal suspensions	12
Films	18	Superconducting	12

Table-9 shows the high-frequency keywords used in the titles of Prof. Sood's research publications. He has contributed research papers where the keyword “Raman” has appeared in 78 titles, closely followed by “Graphene”

in 50 titles and “Phonon” in 45 titles. The keywords “Carbon-nanotubes” and “Pressure-induced” appeared 44 and 35 times in titles, respectively.

### **CONCLUSION**

The study has demonstrated that Prof. A K Sood's research contributions under the study of 44 years (1979 - 2024) are one of the most influential and prolific authors in the field of Physics. Out of the total 518 research papers, 93.2% have received citations. His first paper was published at the age of 28, and now at 73 years, he is still working, which shows his involvement and dedication towards his research. Scientometrics analysis of an author or scientist's research publications helps to understand the various aspects of the career rise and fall of the author's productivity. This paper would also serve as an inspiration to younger scientists of the physics discipline to emulate Prof. Sood as their role model.

### **REFERENCES**

- [1] Balutagi, S., Huded, S. M., & Devi, K. N. (2020). Measuring Research Contributions of Prof. Anurag Kumar: A Scientometric Analysis. *Library Philosophy and Practice*, 2020, 1–25.
- [2] Barik, N., & Jena, P. (2016). Scientometric portrait of Dr. Amartya Kumar Sen, the Nobel Laureate & Bharat Ratna. *KIIT Journal of Library and Information Management*, 3(2), 109-116.
- [3] Kademani, B. S., Kalyane, V. L., & Kademani, A. (1994). Scientometric Portrait of Nobel Laureate Dr. C V Raman. In *Indian Journal of Information, Library and Society* (Vol. 7, pp. 215–249). <http://eprints.rclis.org/handle/10760/4822>
- [4] Kademani, B. S., Kalyane, V. L., & Kumar, V. (2002). Scientometric portrait of Nobel laureate Harold W. Kroto. *SRELS Journal of Information Management*, 39(4), 409-434.
- [5] Kademani, B. S., Kalyane, V. L., & Kademani, A. B. (1996). Scientometric portrait of Nobel Laureate S. Chandrasekhar. *JISSI: International Journal of Scientometrics and Informetrics*, 2(2-3), 119-135.
- [6] Kademani, B. S., Kalyane, V. L., & Kademani, A. B. (1996). Scientometric Portrait of Sir K S Krishnan. *Indian Journal of Information, Library & Society*, 9(1-2), 125-150.
- [7] Kalyane, V. L. (1995). Scientometric portrait of P M Bhargava. *Lucknow Librarian*, 27(1-4), 42-70.
- Kalyane, V.L., & Kalyane, S. V. (1993). Scientometric portrait of Vinodini Reddy. *Journal of Information Sciences*, 4(1), 25-47
- [8] Kalyane, V.L., & Munnolli, S. S. (1995). Scientometric portrait of T.S West. *Scientometrics*, 33(2), 233-256.
- [9] Kavi, P. P., Chandrashekar, M., Byrappa, A., & Jayakanth, F. (2021). Scientometric Portrait of Prof. Dipankar Das Sarma, Solid State & Structural Chemistry Unit, Indian Institute of Science, Bengaluru. *Library Philosophy and Practice*, 2021, 1–21.
- [10] Mondal, D., Raychoudhury, N., & Sarkhel, J. K. (2018). Scientific contribution of Professor Mahalanobis: a bio-bibliometric study. *Current Science*, 115(8), 1470-1476.
- [11] Parvathamma, N., Banu, N., & Kauser, S. (2013). Research contribution of Prof Atul H. Chokshi to Materials Science: A Scientometric Study. *DESIDOC Journal of Library & Information Technology*, 33(5), 378-384.
- [12] Saravanan, G., & Prasad, S. (2012). Scientometric Portrait of G. Thanikaimoni: A Palynologist of High Repute. In P. Sadasivamurthy, D. Shivalingaiah, S.L.Sangam, Sampath Kumar, B.T. Keshava (Eds.), *1<sup>st</sup> National Conference on Scientometrics* (pp.279-291). India.

- [13] Shanthi, B., Thangarasu, K., & Thanuskodi, S. (2024). Scientometric Portrait of Prof. M. Santappa. *Indian Journal of Library and Information Science*, 18(1), 21-26.
- [14] Singh, J. N., & Joshi, T. (2023). Sh. M L Kachroo: A legend of School of Library Science, DLA. *Library Herald*, 61(3), 1-8.
- [15] Sood, Ajay K. (n.d). Home Page. Retrieved Nov. 19, 2024, from <http://www.physics.iisc.ernet.in/~asood/>
- Madhu, S., & Kannappanavar, B.U. (2020). Bio-bibliometric Study of Prof. P Balaram contributions in the field of Bio-organic Chemistry and Molecular Biophysics. *Library Philosophy and Practice*, 2020.
- [16] Tague-Sutcliffe, J. (1992). An Introduction to Informetrics. *Information Processing & Management*, 28(1), 1-3.
- Tiew, W. S. (1999). Khoo Kay Kim, Professor of Malaysian history: A Biobibliometric Study. *The Malaysian Journal of Library and Information Science*, 4(2), 47-57.
- [17] Vellaichamy, A., & Amsan, E. (2016). Scientometric Portrait of Mike Thelwall. *Library Philosophy and Practice*, 2004.

### **Appendix – Brief Profile of Prof. A K Sood**

Prof. Sood has held several Academic positions in both National and International Institutes as Honorary Professor including JNCASR, IISc etc. Presently he is the Principal Scientific Adviser to the Government of India. He had honours and awards, a few of which are listed below:

- “Padma Shri” Civilian Honour by Government of India, 2013
- Bhatnagar Prize in Physics, 1999
- Third World Academy of Sciences (TWAS) Award in Physics, 2000
- G.D. Birla Science Award, 2000
- FICCI (Federation of Indian Chambers of Commerce and Industry), 1999-2000
- M.N. Saha Birth Centenary Award (Indian Science Congress), 2003-2004
- Sir C.V. Raman Award: Physical Sciences (University Grants Commission), 2003
- National Award in Nanoscience and Nanotechnology (DST, GOI), 2006
- Bhatnagar Professorship of Council of Scientific & Industrial Research, 2007
- H.K. Firodia Award in Science & Technology, 2010
- M.G.K. Menon Memorial Award of the National Academy of Sciences, 2023