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# Measuring and assessing research productivity of Physics Scientist Dr R. G. Sonkawade

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## Abstract

Dr R. G. Sonkawade is an Indian professor, Department of Physics Shivaji University, Kolhapur and Advisor cum OSD to Minister, Higher and Technical Education, Govt. of Maharashtra. Former dean, Medical Physicist and Scientist, the authors studied characteristic features, pattern and citation impact of the well-known Indian scientist and professor's scientific research works. At his 20 years of research publishing career, He had 191 publications during 1998 – 2019 in various domains and present study was analysed 90 research publications based on SCOPUS database. The study categorizes and presents the data according to year-wise contribution, authorship pattern, collaborators & degree of collaboration, preferred journals for communication, country-wise publications, top cited authors, citation history, citation impact and highly Prolific Keywords. Thus, it is suggested that 'Scientometric Portrait' is the suitable phrase for the studies on scientists and 'Informetric Portrait' for the studies pertaining to researchers in other domains such as arts, humanities, and social sciences.

**Key Words:** Scientometric portrait; R.G. Sonkawade; Scopus Database; Authorship Pattern; Research productivity.

## Introduction

Scientometric portrait is a study in which we statistically examine publications of an individual, a department, or a topic of any discipline. It is a quantitative and analytical technique wherein we strive to set up a purposeful relation between bio-information of an individual and his biblio-information. It enables us to determine the splendor and effect of precise articles, authors, and publications by means of determining the most stated authors, papers and journals.' mathematical and statistical techniques are used to examine a publication's pattern, alternatives, author's collaboration and chronological distribution of publications.

## About Dr R. G. Sonkawade

(R G Sonkawade, n.d.) **R G Sonkawade** is presently working as a Professor at Department of Physics, Shivaji University, Kolhapur, Maharashtra. He has taken keen interest in the upliftment of the downtrodden society. His contribution for the equity, access and quality was evident through his contributions in the various plans of the Government of India, NAAC, and UGC pertaining to higher education.

He worked at (Wikipedia, n.d.) Inter University Accelerator Centre (formerly Nuclear Science Centre), New Delhi research centre of UGC, New Delhi under MHRD, Govt., of India, for around **18 years as a senior scientist**. He has also worked as Professor at Babasaheb Bhimrao Ambedkar University (Central University), Lucknow and served on various prestigious positions of **Dean, School for Physical Sciences, Head, Department of Applied Physics, Director (i/c), Residential Coaching Academy, at BBAU (central University), Lucknow**. He was **chairman of various statutory bodies** such as Board for Post Graduate Studies, School Board, Research Development Committee at BBAU.

He is a recipient of Visiting Scientist status from **Japan Society for Promotion of Sciences (JSPS)**. A patent is also credited to him. He has published around **76 research papers** in the refereed journals, **23 in the conference proceedings** and **77 in the book of abstracts** and 15 technical reports. He has delivered numerous invited talks within and outside the country. He was **recognized guide from number of National Institutes and Central Universities**. He has guided various research scholars for completion of Ph.D. His papers are cited very well having **citation index of 1383, i10-index of 43 and h-index-21 from google scholar**. He is a member of the **Governing Council, Governing Board, Board of Management, Finance Committee, Planning Board, etc., at Central/State and Deemed Universities**. He is **academic council member** at Central & State Universities. He was member of Governing Council, Governing Board, Finance Committee, etc., on Institute of National Importance at Inter University Accelerator Centre, New Delhi. He was member of **Governing Boards** of various autonomous Colleges nominated by UGC, New Delhi. He has worked as an expert on various Central/State universities for selections of Professors and other positions. Ministry of Social Justice, Govt., of India nominated him as a Member of General Council at NIH, Mumbai. University Grants Commission (UGC) nominated him as member on various committees such as expert on Common Wealth Scheme and minor research Projects of UGC. Nominated **UGC observer** of Career Advancement Scheme (CAS) at various universities **to review the promotion of readers to professors and experts on Common Wealth Scholarship & minor projects of UGC**. He is a member Coordinator of **National Assessment and Accreditation Council (NAAC)**, Bangalore for peer team. He has **accredited various Public State Universities, Deemed Universities, National Institute of Technology (NIT), various colleges in the country**. Former **Patron and President (2-term) of Nuclear Track Society of India (NTSI), which is one of the oldest society** located at BARC, Mumbai. He has visited many countries for his scientific pursuits. His current research mainly involves synthesis and characterization of conducting/composites for sensing applications, supercapacitors and other material science research. He organized number of an International and National Conferences in the capacity of Organizing Secretary/Convener. He has guided many research scholars.

He obtained his Master in Physics from Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Maharashtra); post M. Sc. Diploma in Radiological Physics (DRP) from Bhabha Atomic Research Centre (BARC), Mumbai, and Ph.D from Hemwati Nandan Bahuguna University, Srinagar (Garhwal), Uttaranchal.

Recently he was empanelled for the Vice Chancellor, University of Mumbai, Mumbai by the search committee headed by the renowned scientist Dr. K Kasturirangan, Former Chairman, ISRO. Thereafter he was empanelled for the Director, Inter University Accelerator Centre, New Delhi and for the Vice Chancellor, Swami Ramanand Teerth Marathwada University, Nanded, Maharashtra.

## Related Works

Bio-bibliometrics deals with the biographical study of the individual careers of scientists and researchers and correlating bibliographic analysis of publications or academic and scientific achievements. Individuals create ideas. Institutions are built by individuals and grow around individuals, which are the basic foundations of any institution. The probable doyens of any subject domain may be predicted by studying the

core individuals of the same. Bio-bibliometrics is a term that was first coined by (Sen et al., n.d.-a) to mean the quantitative and analytical method for discovering and establishing functional relationships between bio-data and biblio-data elements. There are many bio-bibliometric studies, but they have hardly used the term 'bio-bibliometrics' in the titles of the papers except for (Sen et al., n.d.-b; Tiew, 1999).

(Dutta, 2019; Haq, 2019; Mondal et al., 2018) analyse characteristic features, pattern and citation impact of the great Indian scientist and statistician's scientific works. A bibliography of his scientific contributions was prepared. It contained 6 books, 142 journal articles, 87 conference papers and 38 research reports. (Garg & Kumar, 2019; Koley & Sen, 2016; Sab et al., 2018) analysed 595 documents produced by Dr Hari Chand Sharma indicates that about 45 per cent of these were published as journal articles and has produced majority of his publications in collaboration with other scientists.

(Kalyane & Kalyane, 1994) first used the phrase 'scientometric portrait' to carry out bio-bibliometric studies on scientists. In some of the papers, (Kalaiappan & Yesudoss, 2018; Koley & Sen, 2006) used the term 'informetrics' in the titles of their papers on (V. Kalyane & Samanta, 1995) respectively. However, there was a continuous use of the phrase 'scientometric portrait' (B. Kademani et al., 1996; Kademani et al., 1994, 2002; B. Kademani & Kalyane, 1996; B. S. Kademani et al., 1994, 1999, 2001, 2002; B. S. Kademani & Kalyane, 1996; V. Kalyane et al., n.d., 2001; Kalyane & Kalyane, 1994; V. L. Kalyane & Munnolli, 1995; V. L. Kalyane & Sen, 1996; V. Kalyane & Samanta, 1995) consistently. A comprehensive reference list on bio-bibliometric studies is provided by (Koley & Sen, 2017). The bio-bibliometric studies or scientometric portrait development carried out by Amsan, Angadi, Balakrishnan, Devarai, Hazarika, Kalyane, Kademani, Karanjai, Koganuramath, Koley, Kumar, Mallikarjun, Mohan, Munnolli, Muttayya, Narayana, Prakashan, Samanta, Sangam, Sarma, Savanur, Sen, Suresh, Vellaichamy and Tiew, some other bio-bibliometric studies were carried out by (Sangam et al., 2006, 2007; Sangam & Savanur, 2010).

In all, the scientometric portraits of 43 scientists were developed by Kalyane et al. Of the 43 scientists, 26 were of Indian scientists, followed by 4 scientists each from UK and USA, while another 2 were from Germany. The native countries of other scientists include Egypt, France, Hungary, Malaysia, Netherlands and Scotland (one scientist each). The scientists from Physics and Astrophysics top the list (13, Nobel-Laureate: 5) followed by Chemistry and Biology (7 each, Nobel-Laureate: 3 in Chemistry), Physiology/ Medicine (7, Nobel-Laureate: 2) and Scientometrics (4). The scientometric portraits developed for laureate scientists figures ten, with five from Physics. The Physics and Astrophysics areas are found to be the most favourable for the bio-bibliometricians. To date only one Indian scientometrician, V.L. Kalyane, bio-bibliometric portrait was developed. But Kalyane is better known as bio-bibliometrician rather than a general scientometrician or bibliometrician.

## **Objectives of the Study**

The main objectives of the study are:

1. To identify the year-wise distribution of authorship pattern;
2. To identify the collaborative authors and degree of collaboration;
3. To calculate author productivity;
4. To identify core journals;
5. To ascertain the domain Wise Distribution of Scientific Publications;
6. To identify highly cited publications;
7. To identify highly Prolific Keywords

## **Data Source and Methodology**

Scientific research publications seem to offer the finest accessible base for assessing the research output. The present scientometric portrait is restricted to the scientific publications of Dr R G Sonkawade. The data so gained was studied for the type of documents authored by Dr R G Sonkawade, pattern of authorship and collaboration, research publications productivity, identification of journals used for distribution of research output, their country of publication and impact factor, keywords. Citations of the published papers were identified using the SCOPUS database. Based on this, authors also identified highly cited papers which received 50 or more citations. Further, MS Excel data sheet was used for analysis to examine the objectives and VOSviewer software for generating various visualisation maps.

## Results and Discussion

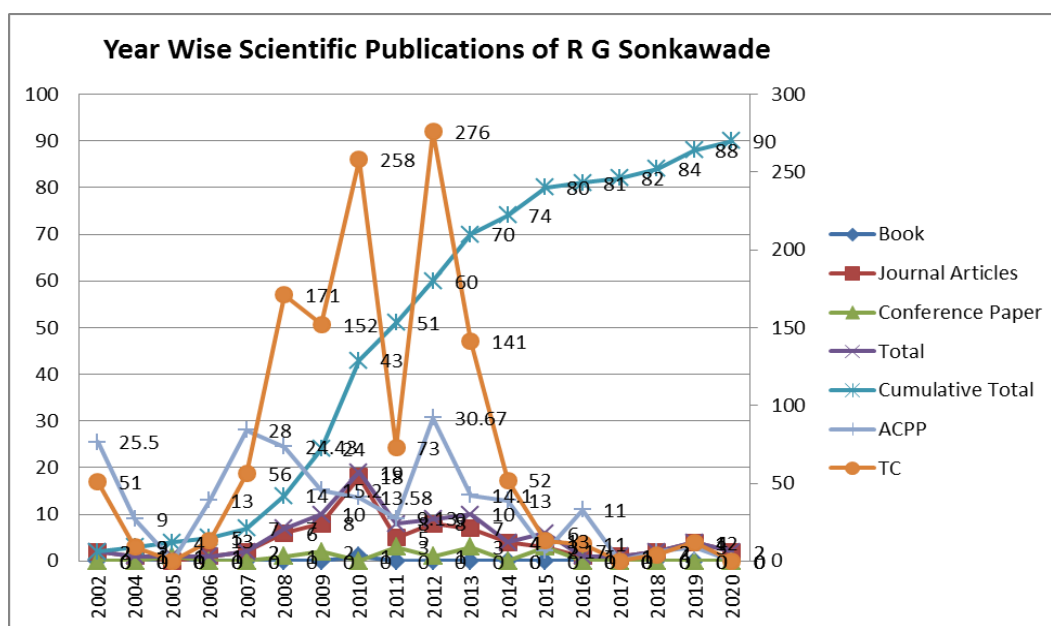
### 1. Year-Wise Scientific Publications of R G Sonkawade

Table 1 and Figure 1 explain the Year-Wise Scientific Publications Dr R G Sonkawade. He published 90 publications on physics and allied subjects; of these 75 (83.33%) journals articles, 14 (15.55%) conference papers and only 01(01.11%) edited book. He contributed more than 80% in journal articles of the total research publications. In the study period, the research activities peaked between 2009 – 2013 with a contribution of 56 research publications consisting of 1 edited book, 46 journal articles, and 09 conference papers. The 69-research output during 2007 – 2014 received highest total citations 1179 (ACCP 18.51%) followed by 21 research output received 113 (ACCP 6.56%) total citations. Thus, the publication productivity of Dr R G Sonkawade is 5 papers per year.

**Table 1: Year-Wise Scientific Publications Dr R G Sonkawade**

Year	Book	Journal Articles	Conference Paper	Total	Cumulative Total	TC	ACPP
2002	0	2	0	2	2	51	25.50
2004	0	1	0	1	3	9	9.00
2005	0	0	1	1	4	0	0.00
2006	0	1	0	1	5	13	13.00
2007	0	2	0	2	7	56	28.00
2008	0	6	1	7	14	171	24.43
2009	0	8	2	10	24	152	15.20
2010	1	18	0	19	43	258	13.58
2011	0	5	3	8	51	73	9.13
2012	0	8	1	9	60	276	30.67
2013	0	7	3	10	70	141	14.10
2014	0	4	0	4	74	52	13.00
2015	0	3	3	6	80	13	2.17
2016	0	1	0	1	81	11	11.00
2017	0	1	0	1	82	0	0.00
2018	0	2	0	2	84	4	2.00
2019	0	4	0	4	88	12	3.00
2020	0	2	0	2	90	0	0.00

TC=Total Citations, ACPP= Average Citations per Paper



**Figure 1: Year-Wise Scientific Publications of R G Sonkawade**

## 2. Authorship Pattern and Degree of Collaboration

Table 2 & Figure 2 show the authorship pattern of his research work. He was published 03 (3.33%) articles as solo author and in the rest 87 articles with co-authors. As 3<sup>rd</sup> author he published 19 (21.11%) and remaining 68 (75.55%) as 4 to 10. This indicates that Dr R G Sonkawade occupied 4<sup>th</sup> and above position in 75.55% of the research papers produced with collaboration.

The degree of collaboration is defined as the ratio of the number of collaborative research papers to the total number of research papers in the discipline for the duration of a certain period of time. The degree of collaboration in research can be measured with the help of the formula proposed by (Subramanian, 1983) used in this study. It is stated as below;

$$C = \frac{N_m}{N_m + N_s}$$

Where, C = Degree of Collaboration

$N_m$  = Number of Multi authored papers

$N_s$  = Number of Single authored papers

In the present study,

$N_m = 87, N_s = 03$

$$C = \frac{87}{87+03} = 0.97$$

Thus, the degree of collaboration in research output of Dr R G Sonkawade is 0.97 during the study period (single author publications 03; multiple authors 87).

**Table 2: Authorship Pattern and Degree of Collaboration**

Year	Single	Three	Four & More	Total	% of 90
2002	0	2	0	2	2.22
2004	0	0	1	1	1.11
2005	1	0	0	1	1.11
2006	0	0	1	1	1.11
2007	0	0	2	2	2.22
2008	0	1	6	7	7.78
2009	1	1	8	10	11.11
2010	1	2	16	19	21.11
2011	0	2	6	8	8.89
2012	0	4	5	9	10.00
2013	0	1	9	10	11.11
2014	0	0	4	4	4.44
2015	0	1	5	6	6.67
2016	0	1	0	1	1.11
2017	0	0	1	1	1.11
2018	0	0	2	2	2.22
2019	0	4	0	4	4.44
2020	0	0	2	2	2.22
	<b>3</b>	<b>19</b>	<b>68</b>	<b>90</b>	<b>100.00</b>

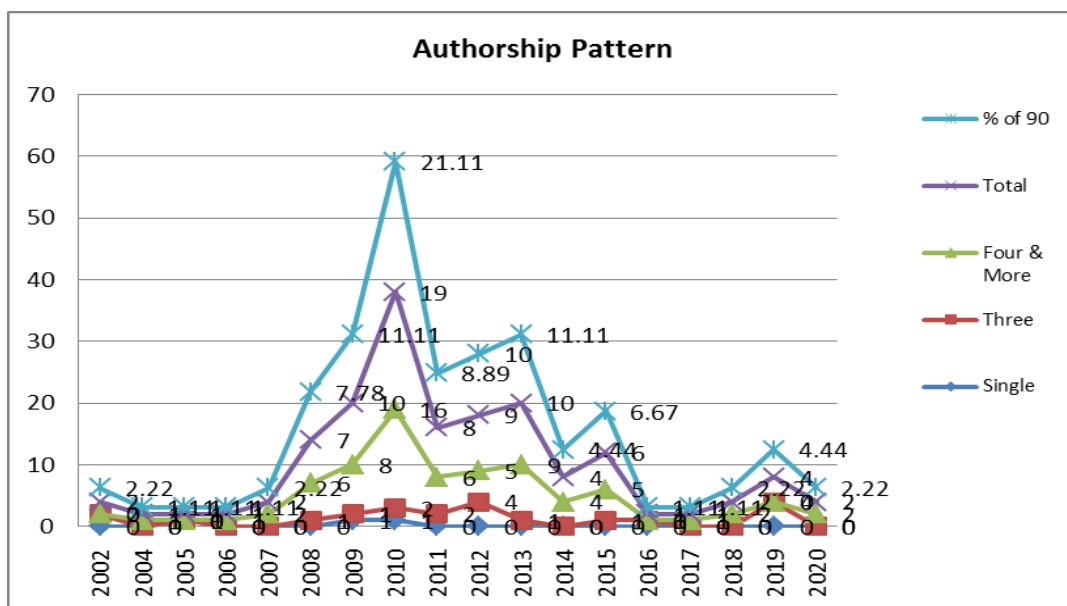


Figure 2: Authorship Pattern

### 3. Collaborative Authors

Table 3 and Figure 3 show his collaboration works and who shared at least 10 papers with Dr R G Sonkawade. He collaborated with 123 authors and produced 90 publications which received 1292 citations. He published 19 publications each with *Vijay Kumar* and *Amarjit Singh Dhaliwal* and both collaborated authors got 24.58 and 23.63 average citations and received 13 & 12 h-index. Followed by 15 research publications was published with *Rakesh Chandled Ramola* with 17.13 average citations and received 9 h-index and 12 publications each with *Chakarvarti, S. K & Yasir Ali*, both got 15 & 18.17 average citations and received 7 & 8 h-index. The highest cited papers were with *Vijay Kumar* with 24.58 average citations.

Table 3: Collaborative Authors

Author Name	TP	%	TC	ACCP	h-index
Kumar, Vijay	19	4.74	467	24.58	13
Dhaliwal, Amarjit Singh	19	4.74	449	23.63	12
Ramola, Rakesh Chand	15	6.00	257	17.13	9
Chakarvarti, S. K.	12	7.50	180	15.00	7
Ali, Yasir	12	7.50	218	18.17	8
Rana, Jatinkumar M.S.	11	8.18	177	16.09	8
Mahur, Ajay Kumar	11	8.18	139	12.64	6
Chandra, Subhash	10	9.00	171	17.10	8
Mehra, Rohit	10	9.00	153	15.30	7
Kant, Krishan	10	9.00	144	14.40	5

TP= Total Publications, TC=Total Citations, ACCP= Average Citations per Paper

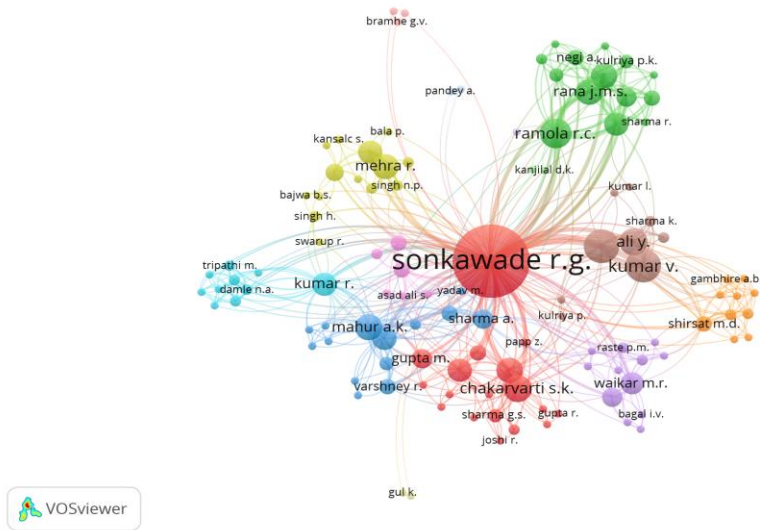


Figure 3: Collaborative Authorship with VOSviewer

#### 4. Preferred Journals with Minimum Two Publications

Scattering of Dr R G Sonkawade 90 publications were spread over 32 journals and 7 conference proceedings. Table 4 and Figure 4 explains, top 15 journal titles where the author published two or more papers. These publications received 933 citations with an average citation of 15.56 per paper. *Indian Journal of Pure and Applied Physics* was his most preferred journal with 17 articles, followed by *Nuclear Instruments and Methods in Physics Research Section B Beam Interactions with Materials and Atoms* with 8 articles and *AIP Conference Proceedings, International Journal of Low Radiation, Radiation Measurements, Vacuum* with 5 publications each. He got highest citation by *Nuclear Instruments and Methods in Physics Research Section B Beam Interactions with Materials and Atoms* journal (225).

Table 4: Journals Used for Communicating Research Results

Source	Documents	TC	ACCP
Indian Journal of Pure and Applied Physics	17	190	11.18
Nuclear Instruments and Methods in Physics Research Section B Beam Interactions with Materials and Atoms	8	225	28.13
AIP Conference Proceedings	5	0	0.00
International Journal of Low Radiation	5	7	1.40
Radiation Measurements	5	68	13.60
Vacuum	5	117	23.40
Asian Journal of Chemistry	3	13	4.33
Indoor and Built Environment	3	20	6.67
Physics Procedia	3	10	3.33
Advanced Materials Letters	2	25	12.50
Applied Physics A Materials Science and Processing	2	36	18.00
Iranian Journal of Radiation Research	2	21	10.50
Journal of Applied Polymer Science	2	19	9.50
Journal of Physics D Applied Physics	2	84	42.00
Radiation Physics and Chemistry	2	98	49.00

TC=Total Citations, ACCP= Average Citations per Paper



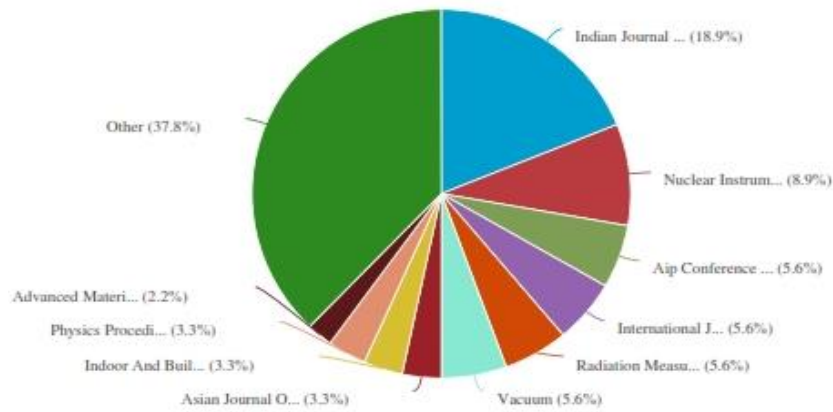


Figure 4: Preferred Journals

### 5. Domain Wise Distribution of Scientific Publications

In order to categorise the impact of scientific contribution of Dr R G Sonkawade in different areas of knowledge, the authors considered the title, keywords, and abstracts of 90 papers. His publications were spread over in 10 different sub-disciplines. Table 5 and Figure 5 explains, his sub-disciplines; In *Physics and Astronomy*, he published 58 scientific papers which received 914 total citation & 15.76 average citations per paper followed by *Materials Science* with 24 articles having 16.63 average citations per paper. He got highest citation in *Environmental Science* area with 19.64 average citations per paper for 11 scientific papers. Some papers allocated with more than one group.

Table 5: Domain Wise Distribution of Scientific Publications

Subject Area	Publications	TC	ACCP
Physics and Astronomy	58	914	15.76
Materials Science	24	399	16.63
Multidisciplinary	18	200	11.11
Medicine	13	50	3.85
Environmental Science	11	216	19.64
Chemistry	9	88	9.78
Engineering	9	69	7.67
Health Professions	3	21	7.00
Agricultural and Biological Sciences	2	32	16.00
Earth and Planetary Sciences	2	95	47.50

TC=Total Citations, ACCP= Average Citations per Paper

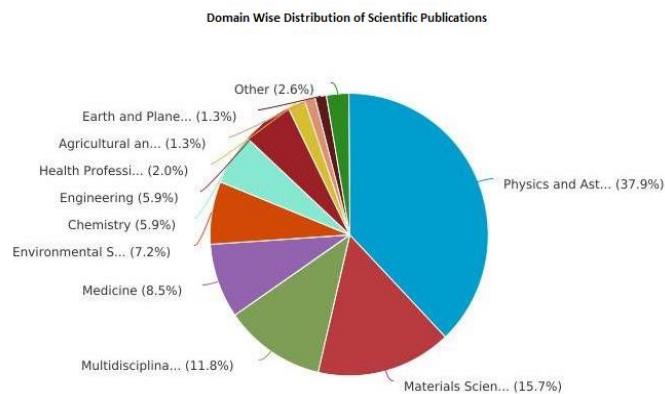


Figure 5: Domain wise Distribution of Scientific Publications

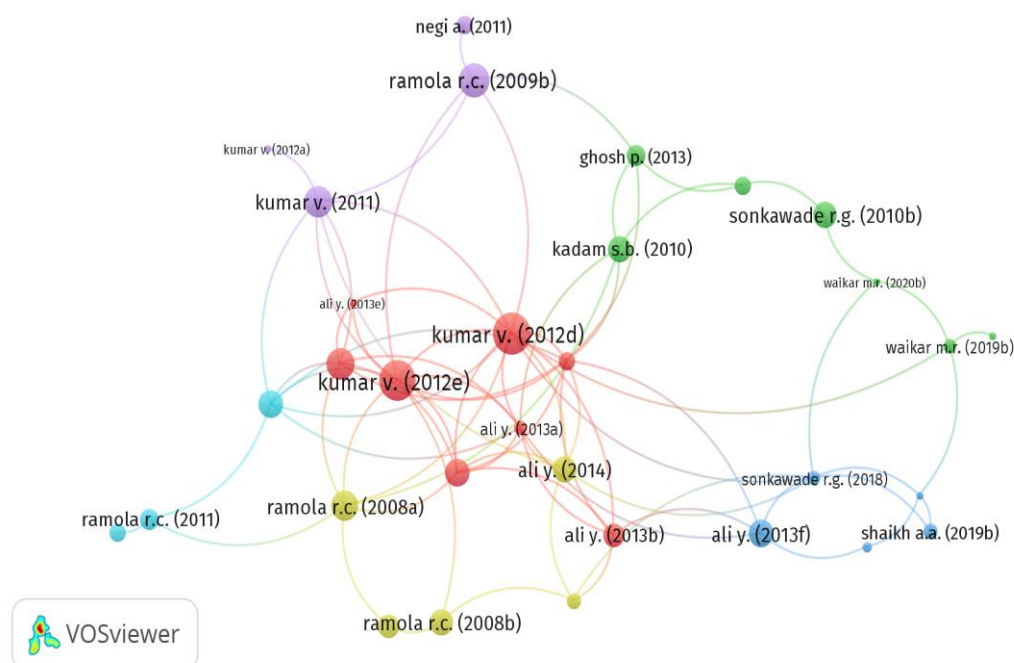
## 6. Distribution of Scientific Publications Based on Citations Received

Based on the significance of impact factor, impact factors have been divided into six categories. These are 0 (zero), =1 <20 (very low), =20 <40 (low), =40 <60 (medium), =60 <80 (high) and =80 <100 (very high). Dr R G Sonkawade published 90 research articles in journals and conferences. Table 6 and Figure 6 explain the scattering of scientific articles by citation. The papers titled 'Effect of gamma irradiation on the properties of plastic bottle sheet' published in the *Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms* (TC87) and 'Carbon ion beam induced modifications of optical, structural and chemical properties in PADC and PET polymers' published in the *Radiation Physics and Chemistry* (TC 81) received highest citations 168, followed by 2 articles (2.25 %) with an average citation of 62 per paper. About (52) 58.43% papers have been published in very low impact factor journals and only 7 articles and 8 Conference Papers (16.85 %) stayed un cited. Overall average citation per paper is 38.25 for articles published in journals and conferences.

**Table 6: Distribution of Scientific Publications Based on Citations Received**

Citation Range	Journal Articles	Conference Paper	Total	%	Cumulative Percentage	TC	ACCP
=80 <100	2	0	2	2.25	2.25	168	84.00
=60 <80	2	0	2	2.25	4.49	124	62.00
=40 <60	4	0	4	4.49	8.99	189	47.25
=20 <40	13	1	14	15.73	24.72	389	27.79
=1 <20	47	5	52	58.43	83.15	442	8.50
0	7	8	15	16.85	100.00	0	0.00

TC=Total Citations, ACCP= Average Citations per Paper



**Figure 6: Citations of Scientific Publications with VOSviewer**

## 7. Highly Cited Papers (Minimum 50 Citations)

Table 7 shows the highly cited papers, which were cited 50 or more times since from their publication and all the 5 research papers published in journals. The journal article 'Effect of gamma irradiation on the properties of plastic bottle sheet' got highest citations so far (87) followed by 'Carbon ion beam induced modifications of optical, structural and chemical properties in PADC and PET polymers' with 81 citations. All the highly cited papers were written with co-authored.

**Table 7: Highly Cited Papers**

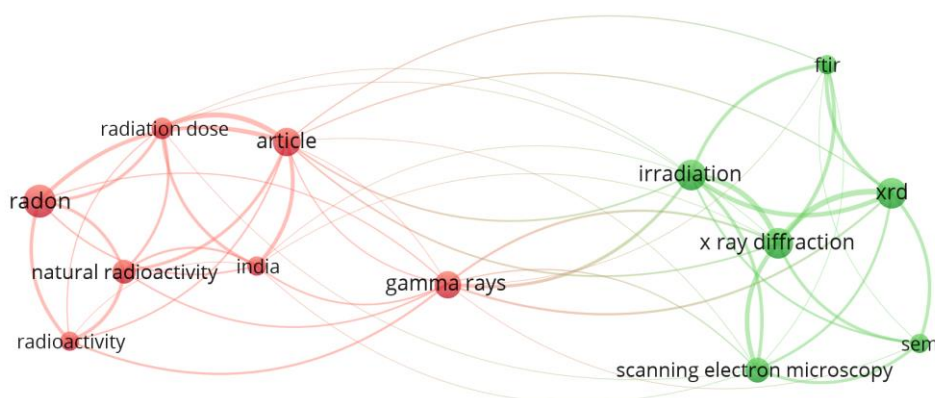
Rank	Title of the article	Authors	Journal/conference	Year of publication	Times cited
1	Effect of gamma irradiation on the properties of plastic bottle sheet	Kumar, V. Ali, Y. Sonkawade, R.G. Dhaliwal, A.S.	Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms	2012	87
2	Carbon ion beam induced modifications of optical, structural and chemical properties in PADC and PET polymers	Kumar, V. Sonkawade, R.G. Chakarvarti, S.K. Singh, P. Dhaliwal, A.S.	Radiation Physics and Chemistry	2012	81
3	Natural radioactivity in common building construction and radiation shielding materials	Sonkawade, R.G. Kant, K. Muralithar, S. Kumar, R. Ramola, R.C.	Atmospheric Environment	2008	63
4	Comparative study of natural radioactivity levels in soil samples from the Upper Siwaliks and Punjab, India using gamma-ray spectrometry	Singh, J. Singh, H. Singh, S. Bajwa, B.S. Sonkawade, R.G.	Journal of Environmental Radioactivity	2009	61
5	<sup>226</sup> Ra, <sup>232</sup> Th and <sup>40</sup> K analysis in soil samples from some areas of Malwa region, Punjab, India using gamma ray spectrometry	Mehra, R. Singh, S. Singh, K. Sonkawade, R. G	Environmental Monitoring and Assessment	2007	53

## 8. Highly Prolific Keywords (Minimum 10 times)

The clusters of Dr R G Sonkawade research publications keywords were created using VOSviewer software. The keyword that appeared more than 10 times in the title of articles only was considered for cluster analysis. The keywords were grouped under 2 clusters as shown in the table 8. The keywords are grouped under 2 clusters such as Article and FTIR as indicated by the Figure 7. The cluster Radon had appeared in 21 articles followed by Irradiation, X Ray Diffraction and XRD in 19, Article in 17, and Gamma Rays in 16 articles.

**Table 8: Highly Prolific Keywords**

Clusters	Key words in the title of articles	No. of appearances
Cluster I	Article	17
	Gamma Rays	16
	India	10
	Natural Radioactivity	13
	Radiation Dose	11
	Radioactivity	10
	Radon	21
Cluster II	FTIR	10
	Irradiation	19
	Scanning Electron Microscopy	14
	SEM	10
	X Ray Diffraction	19
	XRD	19



**Figure 7: Highly Prolific Keywords with VOSviewer**

**9. Citation impact of research papers of Dr R G Sonkawade**

Table 9 explains the citation impact of Dr R G Sonkawade research articles. The 90 scientific research papers including both conference papers and journal articles have been cited 1297 times with an average citation of 14.41 per paper. Out of all research papers, 75 papers (83.33%) have been cited and the remaining 15 papers (16.67%) stay uncited. The h-index, h-index (google scholar) and i-10 index of Dr R G Sonkawade publications are 22, 25 and 54 respectively.

**Table 9: Citation impact of research papers of Dr R G Sonkawade**

Citation details	Total
Research papers (conference and journal)	90
Total cited	1297
Cited articles	75 (83.33%)
Uncited articles	15 (16.67%)
Average citations per paper	14.41
h-index (Scopus)	22
h-index (google scholar)	25
i-10 index	54

## Conclusion

R G Sonkawade worked at Inter University Accelerator Centre (formerly Nuclear Science Centre), New Delhi research centre of UGC, New Delhi under MHRD Govt. of India, for around 18 years as a senior scientist and served on various prestigious positions at various institutions and organizations. Presently working as a Professor at Department of Physics, Shivaji University, Kolhapur, Maharashtra. He has taken keen interest in the upliftment of the downtrodden society. His contribution for the equity, access and quality was evident through his contributions in the various plans of the Government of India, NAAC, and UGC pertaining to higher education. He is a recipient of Visiting Scientist status from Japan Society for Promotion of Sciences (JSPS). His scientific work and research publications have not only enriched Indian Physics and Material science but are also praised worldwide.

Based on the research publications analysis of 90 papers published by R G Sonkawade indicates that he authored maximum papers in collaboration, except 3 paper as a single author. The study found a strong correlation between quantity, quality and the awards and honors won by R G Sonkawade. The high value of citations per paper (14.41) indicates that the research output is well connected to the main stream. Hence it is suggested that 'Scientometric Portrait' is the suitable phrase for the studies on scientists and 'Informetric Portrait' for the researchers in other areas such as arts, humanities and social sciences.

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**Data availability:** The raw data can be obtained from the Scopus (Elsevier's abstract and citation) database and <http://www.sonkawade.com/>

## References

1. Dutta, B. (2019). Biobibliometric portrait of B.K Sen: A librarian, information scientist and scientometrician. *Malaysian Journal of Library & Information Science*, 24(1), 1–21. <https://doi.org/10.22452/mjlis.vol24no1.1>
2. Garg, K. C., & Kumar, N. (2019). Scientometric portrait of hari chand Sharma: A renowned agricultural scientist. *DESIDOC Journal of Library and Information Technology*, 39(3), 109–115. <https://doi.org/10.14429/djlit.39.3.14071>
3. Haq, I. U. (2019). Bio-Bibliometric Analysis of Research Output of Prof . Dr . Kanwal Ameen. *Plisj*, 50(October), 58–70. [https://www.researchgate.net/publication/336587859\\_Bio-Bibliometric\\_Analysis\\_of\\_Research\\_Output\\_of\\_Prof\\_Dr\\_Kanwal\\_Ameen](https://www.researchgate.net/publication/336587859_Bio-Bibliometric_Analysis_of_Research_Output_of_Prof_Dr_Kanwal_Ameen)
4. Kademani, B., & Kalyane, V. (1996). Bibliometric indicators for publication productivity analysis of an individual scientist. *JISSI : The International Journal of Scientometrics and Informetrics*, 2(4), 49–58.
5. Kademani, B., Kalyane, V., & Balakrishnan, M. (1994). Scientometric portrait of P.K. Iyengar. *Library Science with a Slant to Documentation and Information Studies*. <https://doi.org/10.17821/srels/1994/v31i4/48775>
6. Kademani, B., Kalyane, V., & Kademani, A. (1996). Scientometric Portrait of Nobel Laureate S. Chandrasekhar. *JISSI : The International Journal of Scientometrics and Informetrics*.
7. Kademani, B., Kalyane, V., & Kumar, V. (2002). Scientometric portrait of Nobel laureate Harold W. Kroto. *SRELS Journal of Information Management*. <https://doi.org/10.17821/srels/2002/v39i4/48937>
8. Kademani, B. S., & Kalyane, V. L. (1996). Outstandingly cited and most significant publications of R. Chidambaram, a nuclear physicist. *Malaysian Journal of Library and Information Science*.
9. Kademani, B. S., Kalyane, V. L., & Jange, S. (1999). Scientometric portrait of Nobel laureate Dorothy Crowfoot Hodgkin. *Scientometrics*. <https://doi.org/10.1007/BF02458435>
10. Kademani, B. S., Kalyane, V. L., & Kademani, A. . (1994). Scientometric Portrait of Nobel Laureate Dr. CV Raman. *Indian Journal of Information, Library and Society*, 7, 215–249. <http://eprints.rclis.org/handle/10760/4822>
11. Kademani, B. S., Kalyane, V. L., & Kumar, V. (2001). Scientometric portrait of Nobel laureate Ahmed Hassan Zewail. *Malaysian Journal of Library and Information Science*.
12. Kademani, B. S., Kalyane, V. L., & Kumar, V. (2002). A. H. Zewail: Research collaborator par excellence. *Scientometrics*. <https://doi.org/10.1023/A:1014888005151>
13. Kalaiappan, V., & Yesudoss, P. (2018). Scientometric Analysis of Research Output of Two Eminent Scientists of India. *International Journal of Library and Information Studies*, 8(64344), 376–386.
14. Kalyane, V., Information, S. D. R.-N. H. in L. and, & 1994, undefined. (n.d.). *Informetrics on CS Venkata Ram*.
15. Kalyane, V., & Kalyane, S. (1994). Scientometric portrait of M.S. Swaminathan. *Library Science with a Slant to Documentation and Information Studies*.
16. Kalyane, V. L., & Munnolli, S. S. (1995). Scientometric portrait of T. S. West. *Scientometrics*. <https://doi.org/10.1007/BF02020571>
17. Kalyane, V. L., & Sen, B. K. (1996). Scientometric portrait of Nobel laureate Pierre-Gilles de Gennes. *Malaysian Journal of Library and Information Science*.
18. Kalyane, V., Prakasan, E., & Kumar, V. (2001). Scientometric portrait of Ranjit Kumar Mitra. *ILA Bulletin*.
19. Kalyane, V., & Samanta, R. (1995). Informetrics on K. Ramiah. In *New vistas in library and information science: papers in ...*
20. Koley, S., & Sen, B. (2006). A biobibliometric study on Prof. B. N. Koley, an eminent physiologist. *Annals of Library and Information Studies*, 53(2), 74–82.
21. Koley, S., & Sen, B. K. (2016). Biobibliometric portrait of V L Kalyane, a stellar biobibliometrician. *Annals of Library and Information Studies*, 63(3), 161–175.
22. Koley, S., & Sen, B. K. (2017). Biobibliometric portrait of the astronomer jan hendrik oort. *Annals of Library and Information Studies*, 64(4), 217–228.
23. Mondal, D., Raychoudhury, N., & Sarkhel, J. K. (2018). Scientific contribution of Professor Mahalanobis: A bio-bibliometric study. *Current Science*, 115(8), 1470–1476. <https://doi.org/10.18520/cs/v115/i8/1470-1476>
24. R G Sonkawade. (n.d.). <http://www.sonkawade.com/>. <http://www.sonkawade.com/>
25. Sab, C., Parashappa, D., & Bagalkoti, V. (2018). *Bio - Biblometric Study of Prof . B . S . Biradar ' s Contributions to Library and. February*.
26. Sangam, S. L., & Savanur, K. (2010). Eugene Garfield: A Scientometric Portrait. *Collnet Journal of Scientometrics and Information Management*. <https://doi.org/10.1080/09737766.2010.10700883>

27. Sangam, S. L., Savanur, K., & Manjunath, M. (2007). Communication and collaborative research pattern of Sivaraj Ramaseshan: A scientometric portrait. *Scientometrics*. <https://doi.org/10.1007/s11192-007-1670-7>
28. Sangam, S. L., Savanur, K., Manjunath, M., & Vasudevan, R. (2006). Scientometric portrait of Prof. Peter John Wyllie. *Scientometrics*. <https://doi.org/10.1007/s11192-006-0004-5>
29. Sen, S., and, S. G.-I. F. on I., & 1990, undefined. (n.d.-a). Biobibliometrics: Concept and application in the study of productivity of scientists. *Pascal-Francis.Inist.Fr*. Retrieved June 3, 2020, from <https://pascal-francis.inist.fr/vibad/index.php?action=getRecordDetail&idt=19486630>
30. Sen, S., and, S. G.-I. F. on I., & 1990, undefined. (n.d.-b). Biobibliometrics: Concept and application in the study of productivity of scientists. *Pascal-Francis.Inist.Fr*.
31. Subramanyam, K. (1983). Bibliometric studies of research collaboration: A review. *Journal of Information Science*, 6(1), 33–38. <https://doi.org/10.1177/016555158300600105>
32. Tiew, W. S. (1999). Khoo Kay Kim, Professor of Malaysian history: A biobibliometric study. *Malaysian Journal of Library and Information Science*, 4(2), 47–57.
33. Wikipedia. (n.d.). [https://en.wikipedia.org/wiki/R.\\_G.\\_Sonkawade](https://en.wikipedia.org/wiki/R._G._Sonkawade)