A Critical Analysis of Journal of Indian Chemical Society: A Bibliometric Study

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Abstract

A bibliometric analysis of Journal of Indian Chemical Society has been taken for the period of two years (2005 to 2006). In the present study an attempt has been made to critically analyse the year wise distribution of articles, authorship pattern of articles, length of articles, subject wise distribution of articles, the geographical distribution of articles, citation analysis etc. The result has shown that out of 304 articles single author contributed 26 (8.55%) articles while the rest 278 (91.45%) articles were contributed by joint authors. The Study has revealed that 89.47% contributors are Indian researchers and rest 10.53% only from foreign sources. Maximum number of articles has been contributed by joint authorship. The degree of collaboration among Chemical Science researchers during the 2005-2006 was found 0.9144. The study has also shown that the research papers from Physical Chemistry branch contributed more followed by Inorganic Chemistry branch to journal. The study has shown that the journal is not only popular among India but also popular among various countries of the world. Journal contains pure primary research articles.

Keywords: Bibliometric analysis, articles, research papers, Chemistry, Journal of Indian Chemical Society

INTRODUCTION

Research Journals are the main sources of information which contains original and first hand research data in the form of research papers which helps to the other researchers to develop their researches in their area of specific subjects. In present study we have choose the India's most leading journal in the subject of Chemistry. And Chemistry is a branch of science that studies scientifically the composition of substances, structure of substances, and what happens to the substances in different conditions or when mixed substances with each other. Chemistry is mainly concerned with atoms and molecules and their interactions and transformations. The quantitative study of research papers published has been done by bibliometric analysis. The major indicator of scientific progress is the distribution of publication over the period, country wise contribution, collaboration pattern among the scientists, national and international collaborations[1] etc .

The subject of bibliometrics was first defined by Pritchard[2] as-"the application of mathematical and statistical methods to books and other media". It involves the analysis of a set of publications characterized by bibliographic variables such as the author(s), the place of publication, the associated subject keywords, and the citations. Bibliometrics ia a quantitative analysis[2] to measure patterns of scientific publication and citation, in research papers of journal. It is used to measure scientific collaboration, assess interdisciplinary research and look for quality and excellence in research. The aim of bibliometric studies was to measure national research performance in the international context or to describe the development of a science field with the help of bibliometric study[3].

Journal of Indian Chemical Society

The Indian chemical society is premier scientific society[4] of India was founded in 1924 as national forum for the community of chemists and members of allied disciplines in the country. Professor Prafulla Chandra Ray was the founder president of this Society[4]. Publication of scientific journals has been a major activity of Indian Chemical Society. The *Journal of the Indian Chemical Society* publishes peer-reviewed research articles, reviews, notes and communications in the major areas of Inorganic Chemistry, Physical Chemistry, Organic Chemistry, Analytical Chemistry, Environmental Chemistry, Medicinal Chemistry, Biochemistry, Industrial and Applied & Engineering Chemistry, Green Chemistry, Soil Chemistry, Agricultural Chemistry, Sensor Science, Natural products etc. Fundamental theoretical and Experimental research work in these areas of chemistry will be considered for publication. Next to the regular issues, the Indian Chemical Society publishes thematic special issues containing invited scientific original contributions and reviews, conference proceedings of the Annual Convention (November-December) and honour issues.

All special content will also be published after a thorough peer review process. The Journal of the Indian Chemical Society[2] is the official publication of the founded in 1924, and is published in collaboration with Elsevier[5] *(https://www.sciencedirect.com/journal/journal-of-the-indian-chemical-society).*

REVIEW OF LITERATURE

The review of related literature has significant and primary component in any research investigations. It was found that the studies on Bibliometrics in India have covered several studies on journals[3, 6-12], however no specific studies on the bibliometric analysis of Journal of Indian Chemical Society (2005-2006) have been done, hence present research has been tried to cover this journal.

OBJECTIVES OF THE STUDY

The main objectives of the study are:

- To find out Year/Issue wise distribution of articles
- To find out Length of articles
- To find out the Presentation Style (Tables, Figures and Scheme)
- To find out the Subject (Physical Chemistry, Organic Chemistry, Inorganic Chemistry, Analytical Chemistry, General Chemistry , Industrial & chemical, Biochemistry) Analysis
- To find out the Authorship pattern of Journal articles
- To find out the Gender-wise pattern of Journal Articles
- To find out the Institute-wise distribution of papers
- To find out the Type of Affiliation of Contributors
- To find out the Geographical distribution of articles
- To find out the Ranking of leading contributors
- To find out the Number of References of articles
- To find out the Citation Analysis

SCOPE AND LIMITATION OF THE STUDY

Scope

The present study is based on research articles, reviews and research notes published during 2005-2006 in Journal of Indian Chemical Society.

Limitation

- The period of coverage is for only two years i.e., 2005-2006 where it covered only 12 issues of two volumes of Journal of Indian Chemical Society;
- The collection, processing and analyzing of basic data is carried out manually which may act as barrier regarding accuracy;

METHODOLOGY

The present study covers the articles published in Journal of Indian Chemical Society from 2005 to 2006. All the 24 issues of journal from 2005-2006 were scanned to collect the necessary information like author (s) name, number of authors, gender of authors, institutional affiliation, geographical location of authors, number of pages, subject dispersion of articles, contribution with or without citations and types of citation on a 5" × 3" size paper slip. The results were tabulated and analyzed to meet the objectives mentioned above. A total of 304 articles were retrieved from 24 issues of 2 volumes of the journal covering the period of 2005-2006. The data has been analyzed and presented in the form of tables and graphs for interpretation.

RESULTS AND DISCUSSIONS

Authors has recorded all the details of Journal of Indian Chemical Society, such as authorship pattern analysis, year wise distribution of articles, issue wise distribution of articles, subject wise distribution analysis etc. of all articles published from 2005 to 2006 for the following analysis.

➢ Year/Issue wise Distribution of Articles

The Journal of Indian Chemical Society is the primary source of data which has published 304 research papers during 2005 to 2006. The journal on an average has published about 13 research papers per issue. The table 1 shows that the maximum number of articles i.e, 19 were published in the year 2005 with issue no 12 of volume 82 and minimum articles i.e, 07

in the year 2005 with issue no 3 of volume 82. The number of research articles of the journal of Indian chemical society for the period 2005-2006 has been given in table1 and represent in bar diagram (Fig1).

Table 1: Number of Articles per year

Year	Volume	Issues												Total	Mean	% articles
		1	2	3	4	5	6	7	8	9	10	11	12			
2005	82	15	8	7	12	12	13	11	9	16	13	11	19	146	12.16	48.19
2006	83	13	16	11	11	11	16	15	13	15	11	14	12	158	13.16	51.81

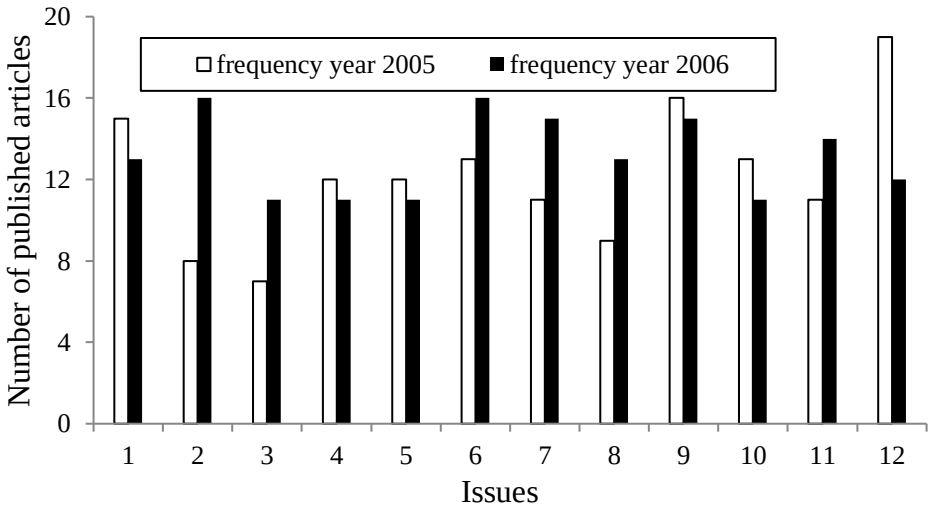

Fig 1: Year-wise and Issue-wise distribution of articles

- **Number of pages/length per Contributions**

When all 304 articles has investigated on the basis of pages per articles then it has been found that the length of almost half of 48.68% the articles ranged from 1 to 4 pages, and slightly less i.e, 44.08% articles length ranges from 5 to 8 pages as shown in table no. 2 and expressed in fig 2. Very less number of articles has expressed more than 8 pages. This indicates that Most of the scientific articles can express valuable information within 4 to 8 pages.

Table 2: Number of pages/length per contributions

Length of Papers	Year 2005	% age	Year 2006	% age	Total	% age
1-4	77	52.74	71	44.94	148	48.68
5-8	59	40.41	75	47.47	134	44.08
9-12	6	4.11	9	5.70	15	4.93
13+	4	2.74	3	1.89	7	2.30
Total	146	100	158	100	304	100

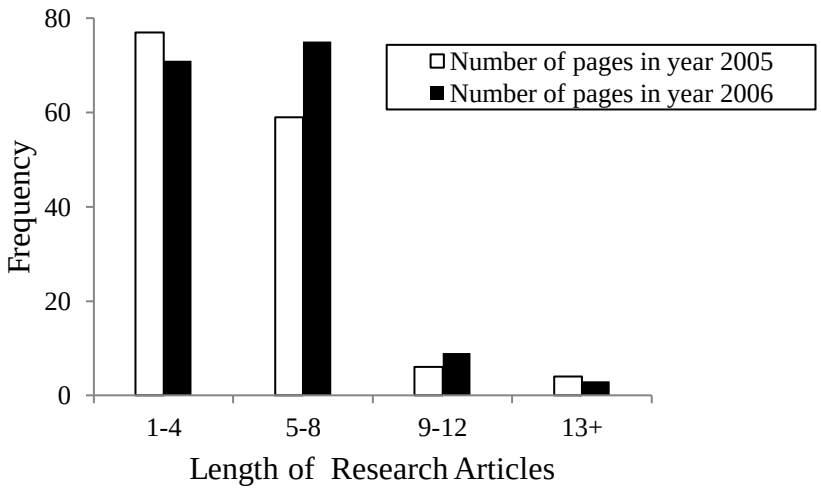

Fig 2: Page-wise distribution of articles

➢ **Presentation Style: Number of Tables, Figures and Schemes**

This table 3 has shown that illustrations are the most prominent form of presentation of scientific research articles.

Table 3: Number of Research Articles uses Tables, Figures and Schemes

Year 2005			Year 2006		Total	
Presentation Type	**Frequency**	**Mean**	**Frequency**	**Mean**	**Frequency**	**Mean**
Table	406	2.78	428	2.73	834	2.74
Figure	348	2.38	269	1.70	617	2.03
Scheme	49	0.33	66	0.41	115	0.37
Total	803		763		1566	

➢ **Subject-wise Analysis:** The research articles in the Journal of Indian Chemical Society have been analysed on the basis of their coverage into various branches of Chemistry. The results have been shown in table 4.

Table 4: Subject wise dispersion of research articles

Sr. No.	Name of Subject	Year 2005	Year 2006	Total	% age
1	Physical Chemistry	52	50	102	33.55
2	Inorganic Chemistry	35	55	90	29.61
3	Organic Chemistry	15	19	34	11.18
4	Analytical Chemistry	6	23	29	9.54
5	General Chemistry	21	05	26	8.55
6	Industrial Chemistry & Chemical Engineering	16	05	21	6.91
7	Bio-Chemistry	01	01	2	0.66
Total		**146**	**158**	**304**	**100**

The table 4 has shown that most of the authors have been taking more interest in Physical Chemistry (33.55%) and Inorganic Chemistry (29.61%). The data has shown that more research interest required in the Biochemistry or lot of thirst exist in the research of Biochemistry. This data has indicated about the young minds may make their career in Biochemistry research. The subject wise dispersion of research articles has shown in Pie-diagram as Fig 3.

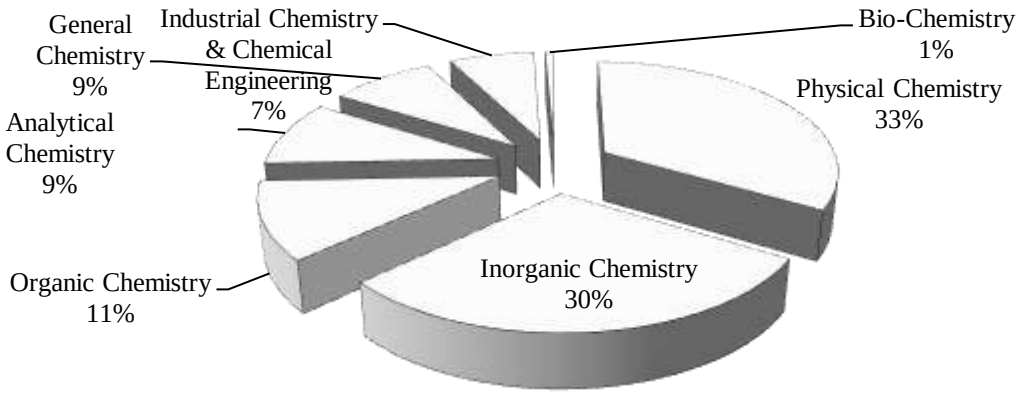

Fig 3: Subject-wise Analysis of articles

➢ **Authorship Pattern:** The Table 5 has revealed the authorship pattern of the articles published during the period of study. Maximum number of articles has been contributed by two authors 112 (36.84%). This is followed by three authors with 83 (27.3%) articles, five and more authors were contributed 29 (9.55%) articles, four authors with 54 (17.76%) and single author with 8.55 % of the total articles. Table 5 data has also shown that out of total 875 contributors male are the major contributors 710 (81.14%) of research articles. The data has shown that multiple authorship (Fig 4) trends in scientific research. Secondly male (81.14%) are main contributors to the research articles.

Table 5: Authorship Pattern

Number of Authors	Frequency	% age	Degree of Collaboration	Gender-wise Authors		
One	26	8.55	**0.9144**	**Sex**	**Frequency**	**% age**
Two	112	36.84		Male	710	81.14
Three	83	27.3		Female	165	18.86
Four	54	17.76		**Total**	**875**	**100**
Five or More	29	9.55				
Total	**304**	**100**				

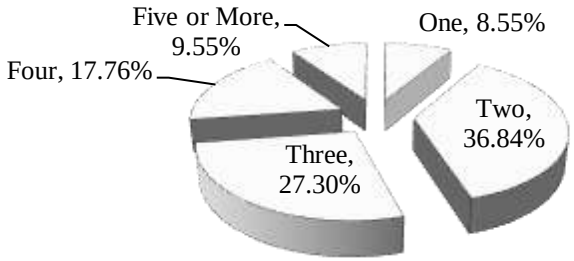

Fig 4: Authorship Analysis

- **Degree of Collaboration:** Degree of collaboration has been given by K. Subramanian which Mathematically Given below:

$$\textbf{Degree of Collaboration} = \frac{\textbf{Number of Multi authored Papers}}{\textbf{Number of Multi authored Papers} + \textbf{Number of Single authored Papers}}$$

In this study, Number of Multiauthored papers = 278

Number of Single Authored Papers = 26

$$\textbf{Degree of Collaboration} = \frac{278}{278+26} = \mathbf{0.9144}$$

Thus the degree of collaboration during the 2005-2006 was 0.9144.

- **Most productive Author:** Table 6 has shown that during the period of study (2005-2006) it has been found that Sulekh Chandra from India is on first rank with 07 contributions in the total 304 articles, it is followed by M. Singh, R.N.Parshad from India got Second rank with 06 contributions, and V. Krishna from India is on third rank with 05 contributions in the articles.

Table 6: Most Productive Author

Name of Author	Country	Number of Research Paper	Rank
Sulekh Chandra	India	7	I
M. Singh, : R.N. Parshad	India	6	II
V. Krishna	India	5	III
A.K.Adya, : S.C.Lahiri, : G. Ghosal, : S.K.Srivastav, : S.Khare, : S.S.Delobel, : S.Srivastav, : Sangeeta Sharma, : Weiki Su	India & China	4	IV
21 different authors	Different Countries	3 each	V
92 different suthors	Different Countries	2 each	VI
424 different authors	Different Countries	1 each	VII

- **Geographical distribution of articles**

Table 7: Geographical location of contributors

Sr. No.	Country	Number of Research Papers	% age
1	India	272	89.47
2	China	7	2.30
3	Egypt	5	1.64
4	UK	5	1.64

5	Pakistan	3	0.99
6	Turkey	3	0.99
7	Bangladesh	2	0.66
8	Romania	2	0.66
9	USA	2	0.66
10	Japan	1	0.33
11	Iran	1	0.33
12	Ethopia	1	0.33
Total		**304**	**100**

Table 7 has shown that most of the contributors to this journal belonged to India while other some contributions were from 12 different countries of the world.

- **Type of Affiliation of Contributors**

Table 8: Type of Affiliation of First Author of Indian Contributors

Affiliation	Number of Articles	% age
Universities/Deemed universities	140	51.48
Colleges	94	34.55
Research Instt./Labs	30	11.02
Industrial Org./Lab	8	2.94
Total	**272**	**100**

Table 8 has shown institution-wise distribution of research papers published in the Journal of Indian Chemical Society during the period under study. Higher no. of authors from universities/ Deemed Universities contributed 140 (51.48%) research papers followed by 94(34.55%) from Colleges. Only 13 % contributors were from other Laboratories.

- **Top Five Most productive Institutions**

Table 9: Institutional Affiliation of Contributors

Name of Institution	Number of research Articles	Rank
University of Rajasthan, Jaipur	14	I
University of Allahabad, Allahabad	12	II
Kalyani University, Kalyani	8	III
Indian association for cultivation of science, Kolkata	7	IV
University College of Science, Kolkata	6	V
Zakir Hussain College, Delhi	6	V
Punjab Agriculture University, Ludhiana	6	V
Jiwaji University, Gwalior	6	V
Jai Naryan University, Jodhpur	6	V
Agra College, Agra	6	V
Dr. Hari Singh Gaur University, Sagar	6	V

Table 9 has shown that during the period of study (2005-2006) it has been found that University of Rajasthan, Jaipur got first rank with 14 contributions in the total 304 articles, it has followed by University of Allahabad got Second rank with 12 contributions, and Kalyani University, Kolkata has got third rank with 08 contributions.

- **Number of References per Article**

Table 10: Number of references

Year 2005			Year 2006		Total (%)	Cumulative frequency (%)
No. Of References range	No. Of Research papers (%)	Cumulative frequency (%)	No. Of Research papers (%)	Cumulative frequency (%)		
1-10	24 (16.44)	24 (16.44)	24 (15.19)	24 (15.19)	48 (15.79)	48 (15.79)
11-20	70 (47.95)	94 (64.39)	64 (40.51)	88 (55.70)	134 (44.08)	182 (59.87)
21-30	36 (24.66)	130 (89.05)	40 (23.52)	128 (79.22)	76 (25.00)	258 (84.87)
31+	16 (10.96)	146 (100)	30 (18.99)	158 (100)	46 (15.13)	304 (100)

Table 10 has revealed that the majority of articles 134 (44.08%) have 11-20 number of references followed by 76 (25%) articles with 21-30 references, 48 (15.79%) articles with 1-5 references and the remaining 46 (15.13%) articles have the 31 & more references as shown in Fig 5 . No one scientific article has found without references.

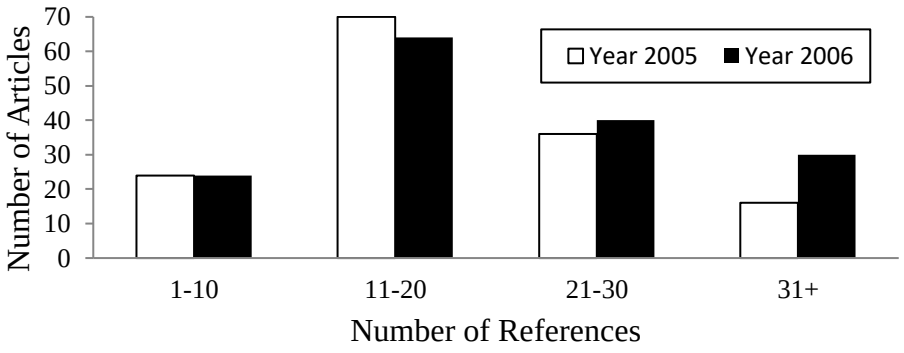

Fig 5: Number of references per article

➢ **Self-Citation**

Table 11: Author and Journal Self citation

Catagory	Frequency	Average
Author Self Citation	814	2.67
Journal Self Citation	275	0.90

In table 11, the author self-citation means the number of times the author cites himself in his own research articles and journal self-citation means the number of times the author cite the same journal in which they publish their research article. The table 11 has shown that there is a large gap between author self-citation and journal self-citation.

➢ **Bibliographic Forms**

Table 12: Bibliographic form of cited documents

Cited Documents	Year 2005	Year 2006	Total	% age	Rank
Journal	2679	3161	5840	82.99	I
Books	412	452	864	12.27	II
Conference/Seminar/Symp. Series	76	56	132	1.87	III
Published/Unpublished Ph.D thesis	64	60	124	1.76	IV
Project Reports	06	02	08	0.11	VII
Other less cited documents	19	38	57	0.81	V
Unidentified	06	06	12	0.17	VI
Total	**3262**	**3775**	**7037**	**100**	

The various types of documents have been cited by the contributors. The contributors has cited journals 82.99% , followed by Books 12.87% and very less other cited media has been used by the researchers as shown in the table 12.

➢ **Year wise Distributions of citations**

Table 13: Age of Cited Journals

Years	No. Of cited Documents	Cumulative Citation	% age	Cumulative % age
0-5	1207	1207	20.66	20.66
6-10	967	2174	16.55	37.22
11-15	694	2868	11.88	49.10
16-20	575	3443	9.84	58.95
21-25	545	3988	9.33	68.28
26-30	381	4369	6.52	74.81

31-35	409	4778	7.00	81.81
36-40	348	5126	5.95	87.77
41-45	281	5407	4.81	92.58
46-50	137	5544	2.34	94.93
51-55	103	5647	1.76	96.69
56-60	46	5693	0.78	97.48
61+	147	5840	2.51	99.93

The time span between the publication of document and its use has been analysed in the table 13. This data has shown that authors normally make the use of current research articles (age of article between 0-15 years) i.e., 49.10% of cited journals. While the author has cited 25.69% journals articles of 16-30 years old and other 25% citations were older than 30 years as shown in Fig 6.

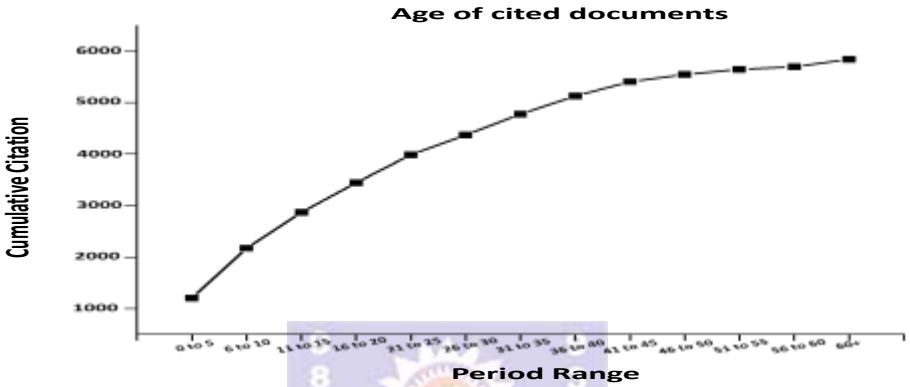

Fig 6: Age-wise distribution of citation

- **Ranking list of cited journals**

Table 13: Age of Cited Journals

Rank No.	Journal Title	No. Of Citation	Cumulative Citation	% age	Cumulative % age
1	Indian journal of Chemistry (Section A)	551	551	9.43	9.43
2	Journal of Indian Chemical Society	275	826	4.70	14.13
3	Inorganic Chemistry	238	1064	4.07	18.20
4	Journal of Chemical Society	193	1257	3.30	21.15
5	Journal of American Chemical Society	168	1425	2.87	24.37
6	Journal of Chemical Physics	135	1560	2.31	26.68
7	Journal of Physical Chemistry	115	1675	1.96	28.64
8	Journal of Chemical Society, Dalton transactions	113	1788	1.93	30.57
9	Thermochimica Acta	106	1894	1.81	32.38
10	Inorganica Chimica Acta	90	1984	1.54	33.92
11	Bulletin of Chemical Society, Jpn	87	2071	1.48	35.40
12	Coordination Chemistry Reviews	85	2156	1.45	36.85
13	Indian Journal of Chemistry Section B	78	2319	1.33	39.63
14	Journal of Inorganic Nuclear Chemistry	72	2391	1.23	40.86
15	Journal of Chemical Engg. Data	69	2460	1.18	42.04
16	Synthesis and Reactivity in Inorganic and Metal Organic Chemistry	64	2524	1.09	43.13

17	Nature	63	2587	1.07	44.2
17	Transition Metal Chemistry	63	2650	1.07	45.27
17	Talanta	63	2713	1.07	46.34
18	Asian Journal of Chemistry	62	2775	1.06	47.4
19	Journal of Organic Chemistry	59	2834	1.01	48.41
20	Chemical Reviews	53	2887	0.90	49.31
21	Journal of Analytical Chemistry	52	2939	0.89	50.2
22	Analytica Chimica Acta	47	2986	0.80	51
22	Physical Chemistry	47	3033	0.80	51.8
22	Physical Reviews	47	3080	0.80	52.6
23	Tetrahedron letters	40	3120	0.68	53.28
23	Journal of Chemical Society Perkin Transactions	40	3160	0.68	53.96
23	Journal of Thermal Analysis	40	3200	0.68	54.64
23	Canadian Journal of Chemistry	40	3240	0.68	55.32
24	Journal of Chemical Society Faraday Transanctions	39	3279	0.66	55.98
24	Tetrahedron	39	3318	0.66	56.64
25	Langmuir	31	3349	0.53	57.17
26	Science	28	3377	0.47	57.64
26	Indian Journal of Chemistry	28	3405	0.47	58.11
27	Journal of Electrochemical Society	27	3432	0.46	58.57
28	Journal of Physics: Condensed Matter	26	3458	0.44	59.01
28	Journal of Chemical Society, Chemical Communication	26	3484	0.44	59.45
29	Organometallics	24	3508	0.41	59.86
30	Journal of Chemical research	23	3531	0.39	60.25
30	Journal of Americal Ceremic Society	23	3554	0.39	60.64
30	Macromolecules	23	3577	0.39	61.03
31	Biophysical Journal	22	3599	0.37	61.4
31	International Journal of Chemical Kinetics	22	3621	0.37	61.77
31	Journal of Organometallic Chemistry	22	3643	0.37	62.14
31	Synthetic Communication	22	3665	0.37	62.51
32	Journal of Chemical Thermodynamics	20	3685	0.34	62.85
32	Main Group Metal Chemistry	20	3705	0.34	63.19
33	Journal of Applied Polymer Science	18	3723	0.30	63.49
33	Spectrochimica Acta	18	3741	0.30	63.79
34	Analyst	17	3758	0.29	64.08
34	Z. Naturforschung	17	3775	0.29	64.37
34	Journal of Heterocyclic Chemistry	17	3792	0.29	64.66
35	Chemical Communication	16	3808	0.27	64.93
35	Journal of Biological Chemistry	16	3824	0.27	65.2
36	Journal of Solution Chemistry	15	3839	0.25	65.45
36	Journal of Applied Physics	15	3854	0.25	65.7
36	Chemical Abstract	15	3869	0.25	65.95
36	Physical Review Letters	15	3884	0.25	66.2

37	Water research	14	3898	0.23	66.43
37	Australia Journal of Chemistry	14	3912	0.23	66.66
37	Journal of Medicinal Chemistry	14	3926	0.23	66.89
37	Angewandte Chemie International	14	3940	0.23	67.12
38	Biochemistry	12	3952	0.20	67.32
38	Journal of Coordination Chemistry	12	3964	0.20	67.52
38	Journal of Physics: Solid State Physics	12	3976	0.20	67.72
38	International Journal of Radiation Biology	12	3988	0.20	67.92
39	Synthesis	11	3999	0.18	68.1
39	Radiation Research	11	4010	0.18	68.28
40	Transactions of the Faraday Society	10	4020	0.17	68.45
40	Journal of Colloid and Interface Science	10	4030	0.17	68.62
41	Journal of Pure and Applied Physics	9	4039	0.15	68.77
41	Indian Journal of Chemical Technology	9	4048	0.15	68.92
41	Analytical letters	9	4057	0.15	69.07
41	Chemical Physics letters	9	4066	0.15	69.22
41	Journal of Polymer Science	9	4075	0.15	69.37
41	Fluid Phase Equilibria	9	4084	0.15	69.52
41	Environmental Science & Technology	9	4093	0.15	69.67
42	Journal of Chemical Technology & Biotechnology	8	4101	0.13	69.8
42	Biochimica et Biophysica Acta	8	4109	0.13	69.93
42	Journal of Molecular Biology	8	4117	0.13	70.06
42	Journal of Scientific and Industrial Research	8	4125	0.13	70.19
42	Rubber Chemical Technology	8	4133	0.13	70.32
42	Advanced Material	8	4141	0.13	70.45
42	Journal of Material Chemistry	8	4149	0.13	70.58
42	Current Science	8	4157	0.13	70.71
42	Phytochemistry	8	4165	0.13	70.84
42	European Journal of Inorganic Chemistry	8	4173	0.13	70.97
42	Electrochimica Acta	8	4181	0.13	71.1
42	Journal of Indian Society of Soil Chemistry	8	4189	0.13	71.23
42	Journal of the Indian Council of Chemists	8	4197	0.13	71.36
42	Fresenius' Journal of Analytical Chemistry	8	4205	0.13	71.49
42	Inorganic and Nuclear Chemistry letters	8	4213	0.13	71.62
43	Solar Energy Material & Solar Cell	7	4220	0.11	71.73
43	Soil Science Society of America Journal	7	4227	0.11	71.84
43	European Polymer Journal	7	4234	0.11	71.95

43	Revue Roumaine de Chimie	7	4241	0.11	72.06
43	Inst pet.	7	4248	0.11	72.17
43	Chemische Berichte	7	4255	0.11	72.28
43	Bulletin de la Societe Chimique de France	7	4262	0.11	72.39
43	Journal of Physical Chemistry	7	4269	0.11	72.5
43	Journal of Solid State Communication	7	4276	0.11	72.61
43	Journal of Physics	7	4283	0.11	72.72
43	Journal of Pharmaceutical and Biomedical Analysis	7	4290	0.11	72.83
43	Water Air and Soil Pollution	7	4297	0.11	72.94
43	Polish Journal of Chemistry	7	4304	0.11	73.05
43	Journal of European Ceremic Society	7	4311	0.11	73.16
43	Journal of Chromatography B: Biomedical Sciences and Application	7	4318	0.11	73.27
44	Mutation Research	6	4324	0.10	73.37
44	Aquaculture	6	4330	0.10	73.47
44	Thin Solid Films	6	4336	0.10	73.57
44	Acta Chemica Scandinavica	6	4342	0.10	73.67
44	Indian Geotechnical Journal	6	4348	0.10	73.77
44	Journal of Bangladesh Academy of Sciences	6	4354	0.10	73.87
44	Indian Phytopathology	6	4360	0.10	73.97
44	Industrial & Engineering Chemistry Research	6	4366	0.10	74.07
44	Indian Journal of Environmental Science	6	4372	0.10	74.17
44	Colloids and Surfaces	6	4378	0.10	74.27
44	American Journal of Pathology	6	4384	0.10	74.37
44	Acta Crystallographica	6	4390	0.10	74.47
	Remaining 1450 articles were cited less than six times		4390 +1450=5840		

From table 13 it has been observed that 21 journal occupy 50.2% of the total citations. Among them the first three most frequently cited journals are first one is Indian Journal of Chemistry (Section A) with citation 551 (9.43%). The second one is the source journal i.e., Journal of Indian Chemical Society with citation 275 (4.70%) and inorganic chemistry journal with citation 238 (4.07%). Out of first 21 ranked journals the two most cited journals are from India and the third one is from USA.

This ranked list has become the practical tool to help the librarians and researcher to select the journals of maximum utility in terms of their coverage in particular subjects.

➢ **Geographical Distribution of Citations**

From the citations the country of their origin can be identified in all types of cited documents like journal article, books, reports etc. Table 14 has presented the geographical distribution of citations.

Table 14: Country wise distribution of cited journals

Sr. No.	Country	Frequency	% age
1	U.S.A.	1182	20.24
2	U.K.	973	16.66
3	India	704	12.05
4	Netherland	367	6.28

5	Ireland	289	4.94
6	Japan	175	2.99
7	Australia	123	2.10
8	Canada	121	2.07
9	Germany	106	1.81
10	Romania	98	1.67
11	Isreal	87	1.48
12	Itely	65	1.11
13	Denmark	57	0.97
14	Poland	46	0.78
15	China	33	0.56
16	France	11	0.18
17	Philedelphia	7	0.11
18	Newzeland	2	0.05
19	Others unidentified	1394	23.87
Total		5840	99.92

Table 14 has shown that most of the contributions were from foreign countries. India got 3rd position in the country wise distribution of cited articles.

FINDINGS

- The Journal of Indian Chemical Society published 304 research papers during the period of study i.e. from 2005 to 2006. The journal on an average has published 13 research papers per year.
- Maximum numbers of articles were contributed by two authors 112(36.84%). Most of male author contributed to the research articles in the field of Chemistry.
- The degree of collaboration (C) during the overall 02 years (2005-2006) is 0.9144.
- Higher No of Authors contributed 140(51.48%) papers in the articles from universities.
- During the period of study total 304 research papers contributed in the two volumes from different countries & India stands first place with the 272 (89.47%) research papers in these two volumes.
- Most of the scientific articles can express valuable information within 4 to 8 pages.
- Illustrations (Tables, Figures, Schemes) are the most prominent form of presentation of scientific research articles.
- Most of the authors have been taking more interest in Physical Chemistry and Inorganic Chemistry.
- The various types of documents have been cited by the contributors. The contributors have cited journals 82.99%.
- Authors normally make the use of current research articles (age of article between 0-15 years) i.e., 49.10% of cited journals.

It has been found that 21 journal occupy 50.2% of the total citations. Among them the first is Indian Journal of Chemistry (Section A) with citation 551 (9.43%). The second one is Journal of Indian Chemical Society with citation 275 (4.70%) and third is inorganic chemistry journal with citation 238 (4.07%).

- Most of the citations were from foreign countries. India got 3rd position in the country wise distribution of cited articles.

CONCLUSIONS

Bibliometric techniques are being used for a variety of purposes like determination of various scientific indicators, evaluation of scientific output, selection of journals for libraries and even forecasting the potential of a particular field. The popularity in the adaptation of bibliometric techniques in various disciplines stimulated stupendous growth of literature on bibliometrics and its related areas. The journal has published 304 articles during the period of study. Maximum number of articles has been contributed by two authors 112 (36.84%). The present study has revealed that the highest number of articles have appeared from Physical Chemistry. Majority of the authors preferred journals as the source of information providing

the highest number of citations (82.99%). The most cited journals were from foreign countries. Journal of Indian Chemical Society is the reputed journal in the field of Chemistry. Analysis of contributions of 2 volumes of the journals has shown that it covers contributions related to nearly all aspect of Chemistry. The journal is highly popular in Indian Scientific Community.

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