

## **Bibliometric Analysis of Research Publication of Department of Chemistry, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad**

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### **Abstracts**

*The paper brings out the result of a bibliometric study of research publications of department of chemistry, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, for the period 1975-2012. It analyzed all the 774 research publications from the 144 journals. it examines year- wise distribution of papers, authorship pattern, journal in which author publish, productivity of faculty and discipline-wise distribution etc. findings, suggestions and references are shown with relevant data analysis.*

**Keywords:** bibliometrics, chemical science, research trends, research publications

### **1. Introduction**

Bibliometrics Constitutes one of the major thrust of research in the field of library and information science. It utilizes quantitative analysis and statistics to describe patterns of publications within a given field or body of literature. The term “statistical bibliography” was first employed by E.W. Hulme in 1923, to refer to the application of quantitative techniques to libraries. The word bibliometrics appeared in print in Alan pitchards article statistical bibliography or bibliometrics in the December issue of the journal of documentation. It flourished in early 20<sup>th</sup> century with the works of lotka<sup>3</sup>, bradford<sup>4</sup>, and zipf<sup>5</sup> who observed distribution pattern in word frequency, author and journal productivity. Bibliometric methods have been used in Eastern Europe countries to monitor science and scientists. The field of bibliometrics has produced major information scientists such as B.C. brookers and h. egghe.

The present study is a bibliometric analysis of research publications of department of chemistry, Dr. Babasaheb Ambedkar Marathwada University Aurangabad, from 1975-2012. Chemistry department came into existence in 1958. It completed 54 years of its working in the year 2012. Since its inception it has been making consistent efforts to provide quality education in the area of the chemistry. It is not only the most prestigious department of the university but has also acquired prime significance at the national level. The impact of the contributions of this department in the progress of discipline is quite visible in all spheres. The department had been adopted by the UGC under its special assistance programme (SAP), (DST) AND (CSIR) under its programme for improvement of science and technology (FIST). Number of state of the art instruments available for research and teaching include (i) NMR: nuclear magnetic resonance (ii) X –ray diffract meter, (iii) gas chromatography-mass spectrometer ,(iv) UV-vis spectrophotometer,(v) fluorescence spectrophotometer,(vi) atomic absorption spectrometer,(vii) high performance liquid chromatography, (viii) differentiate scanning calorimeter, (ix) Mossbauer spectrometer etc.

### **2. Objectives of the study**

The present study is undertaken to have an in depth study of the publication of department of chemistry during the period 1975-2012 for analyzing.

- 1) Year-wise distribution of papers.
- 2) Domain-wise growth in the publication
- 3) Authorship pattern of the papers.

- 4) Productivity of the faculty
- 5) Journals where the authors publish.

### **3. Source of Information**

The Information About The Department Is Taken From Annual Reports. The Research Publications Have Been collected from faculty personally. The Departments Of Chemistry Is One Of The Oldest Departments In The University. Its Faculty Members Have Been 4 As Fellow Of Indian National Chemical Laboratory Pune (One), Fellow Of DST, New Delhi (One), Fellow Of The Royal Society Of Chemistry UK, Maharashtra Academy Of Science Pune And National Environmental Science Academy Delhi And Indian Chemical Laboratory (One). Its Faculty Members Have Been 3 Awarded Ideal Teacher From Rotoract Club Of Aurangabad (One) And Government Of India (Two)

### **4. Methodology**

The research publications from the department of chemistry were taken for study. These were collected from faculty personally and were analyzed considering year-wise distribution, authorship pattern and productivity of faculty.

### **5. Results and Discussion**

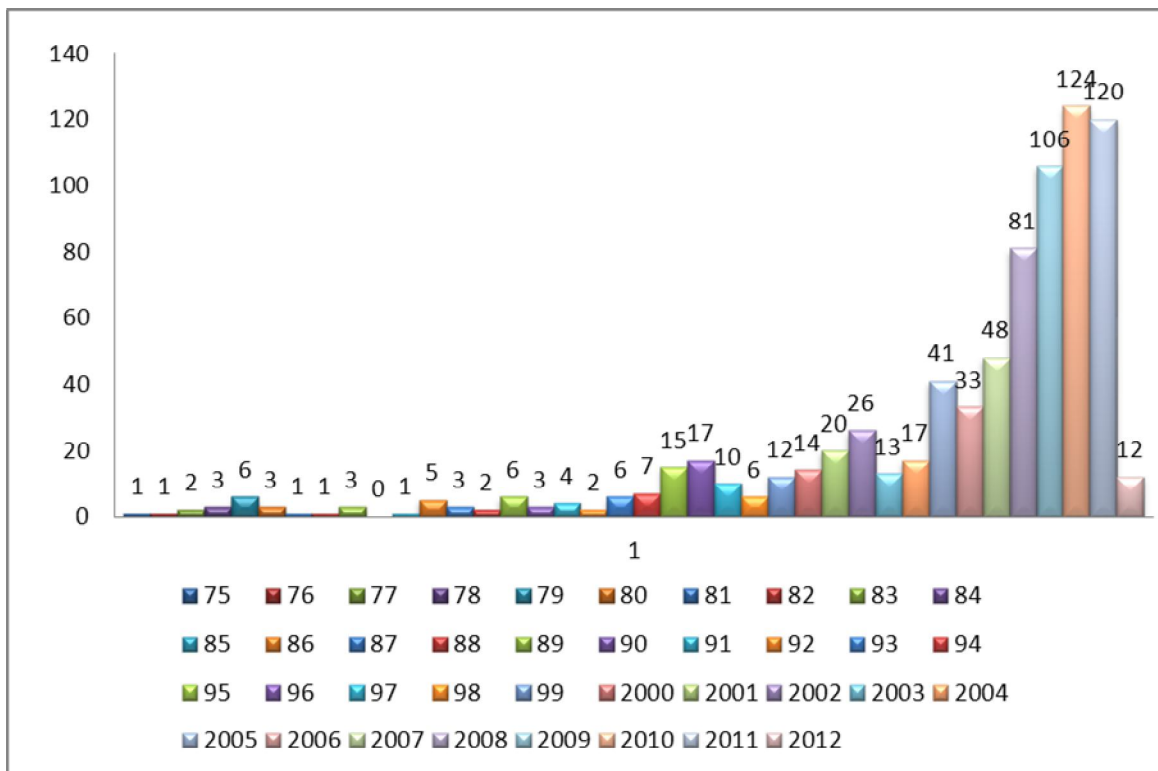
#### **5.1 Year-Wise Distribution of Publications**

The faculty of department of chemistry regularly publishes in international journals of repute. The faculty published 774 research papers during the period of study i.e. from 1975-2012. The faculty on an average has published more than 50 research papers after 95 year. These research papers have been published in more than 150 journals resulting on an average three publications per journals. The number of research publication of department of chemistry for the period 1975-2012 has been given year-wise in table 1. Figure 1 shows the regular increase in number of publications from 1975 to 2012. The department published only one papers in journal of the Indian chemical society in the year 1975- which rose to 53 papers in the year 2011. as a result, where as in the year 1975, department published only 0.13% of total publications, in year the 2012 the contribution increased to 15.50%.

**Table 1:- Year-Wise Number of Publication for the Period 1975-2012 Distribution**

Year	No. Of. Publications	% Age
1975	1	0.13%
1976	1	0.13%
1977	2	0.26%
1978	3	0.39%
1979	6	0.78%
1980	3	0.39%
1981	1	0.13%
1982		
1983	3	0.13%
1984		
1985	1	0.13%
1986	5	0.65%
1987	3	0.39%
1988	2	0.26%
1989	6	0.78%
1990	3	0.39%
1991	4	0.52%
1992	2	0.26%
1993	6	0.78%
1994	7	0.91%
1995	15	1.94%
1996	17	2.19%
1997	10	1.29%
1998	6	0.78%
1999	12	1.56%
2000	14	1.80%
2001	20	2.58%
2002	26	3.35%
2003	13	1.67%
2004	17	2.19%
2005	41	5.29%
2006	33	4.26%
2007	48	6.20%
2008	81	10.46%
2009	106	13.69%
2010	124	16.02%
2011	120	15.50%
2012	12	1.56%
	<b>Total - 774</b>	<b>100</b>

**Figure No. 1:- year-wise growth of publications: period 1975-2012**



### 5.2 Journals where the scientists publish

The publications have been classified into three different categories in accordance with their number in each journal. The “category A” involves the journals where 21-67 research paper have been published,”category B” contains the journals where respectively 12-17 papers have been published and “category C” involves the journals where 1-9. The list of journals of categories A, B, and C and their impact factors are tabulated in table 2 and such as figure no. 2 given the bellow.

**Table 2:- list of journals of categories A-B and C**

Sr. no.	Name of the journals	Publication of the department	%age	category
1	Journal of heterocyclic chemistry	67	8.65%	A
2	Indian journal of chemistry	58	7.49%	A
3	Journal of the Indian chemical society	53	6.84%	A
4	Journal of the Korean chemical society	45	5.81%	A
5	Bulletin Korean chemical society	42	5.42%	A
6	Chinese chemical letters	35	4.00%	A
7	Bulletin if the catalysis society of India	28	3.6%	A
8	Tetrahedron letters	24	3.10%	A
9	Green chemistry letters & review	21	2.71%	A
10	Organic chemistry: an Indian journal	17	2.19%	B
11	International journal of chemical science	15	1.93%	B
12	Acta ciencia indica	12	1.55%	B
13	Arabian journal of chemistry in press	11	1.42%	B
14	Phosphors, sulfur, silicon and the related elements	10	1.29%	B
15	Journal chemical Engineering data	12	1.55%	B
16	Journal mol. liquids	9	1.16%	C
17	Chemistry an India journal	9	1.16	C
18	Journal of co-ordination chemistry	8	1.03%	C
19	Inorganic chemistry an Indian journal	8	1.03%	C
20	Indian journal of heterocyclic chemistry	8	1.03%	C
21	Materials science, an Indian journal	7	0.91%	C
22	European journal of medicinal chemistry	7	0.91%	C
23	South African journal chemistry	7	0.91%	C
24	Materials chemistry and physics	6	0.18%	C
25	Russian journal of inorganic chemistry	5	0.65%	C
26	Journal of science	5	0.65%	C
27	Ultrasonic's sonochemistry	5	0.65%	C
28	Bioorganic & medicinal chemistry letters	5	0.65%	C
29	Oriental journal of chemistry	5	0.65%	C
30	Transition metal chemistry	5	0.65%	C
31	Chinese journal chemistry	5	0.65%	C
32	Letters inorganic chemistry	5	0.65%	C
33	Central euro. Journal of chemistry	5	0.65%	C
34	Journal solution chemistry	5	0.65%	C
35	Indian journal pharm. science	5	0.65%	C
36	chromatographic	5	0.65%	C
37	others	195	25.20%	C

### 5.3 Discipline-Wise Distribution of Publications

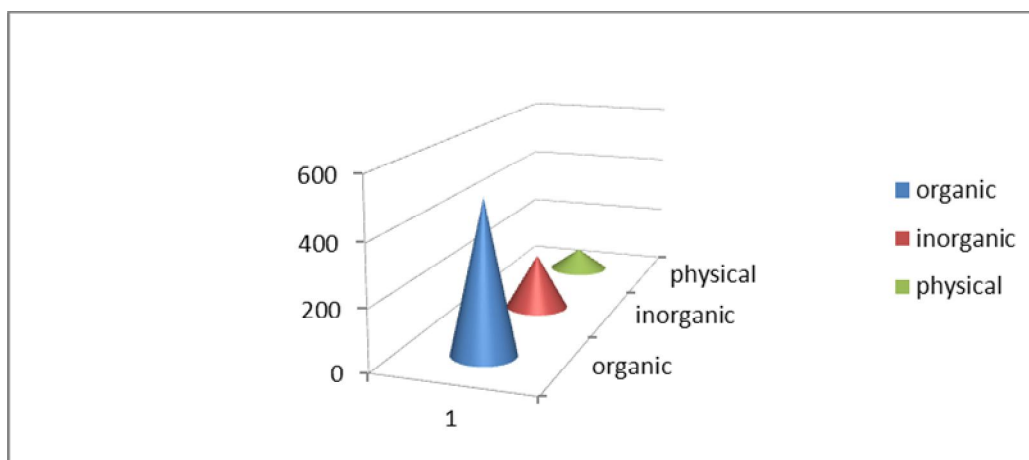
The research publications in chemistry can be classified into three main disciplines i.e. (I) organic chemistry (ii) inorganic chemistry (iii) physical chemistry (table 4) though many of these publications have research work across these boundaries, the classification has been done by considering the theme of the work.

Table 3 reveals that the department published 66.40% papers in organic chemistry, 23.91% in inorganic chemistry and 9.69% in physical chemistry and showing the figure no. 2 in following types.

**Table 3:- Discipline-wise distribution of publication**

Sr. No.	Discipline-wise distribution	No. of. publications	% age
1	organic	514	66.40%
2	inorganic	185	23.91%
3	physical	75	9.69%
		<b>Total-774</b>	<b>100</b>

**Figure no. 2:- Discipline- wise distribution**

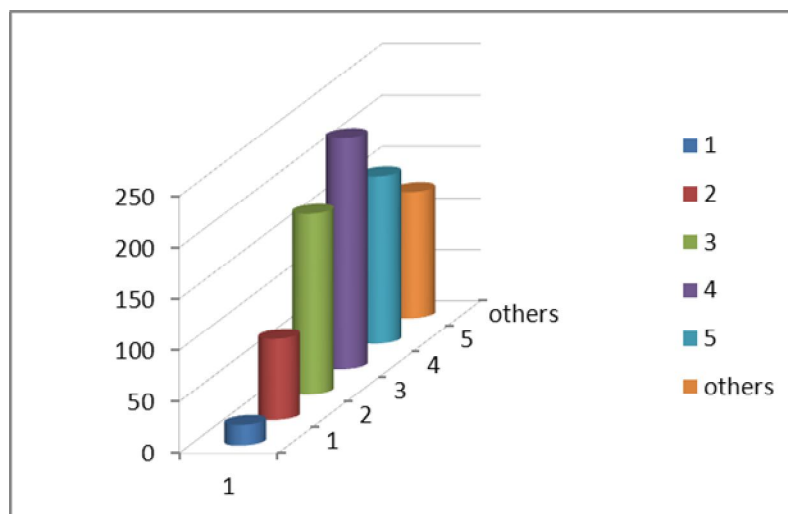


#### 5.4 Authorship Pattern of Papers

Collaborative research is common feature which is seen in science field especially during the 21<sup>st</sup> century. It is a natural reflection of complexity, scale and costs of modern investigations in science. Multi authorship provides different measures of collaboration in the subject. Table 4 shows that all the publication in chemistry are multi authored. This shows that the collaborative research is more useful in this field.

**Table 4:- Authorship Pattern of the Papers**

No. Authors	Of.	Name Of Publications	% Age
1	8		1.04%
2	79		10.20%
3	176		22.73%
4	225		29.07%
5	163		21.06%
others	123		15.89%
<b>total</b>	<b>774</b>		<b>100</b>

**Figure 3 Authorship pattern of the papers**

### 5.5 productivity of faculty

To evaluate the productivity of faculty in chemistry department It was seen that Dr. M. S. Shingare has published 259 papers during (1975- 2012).

**Table:-5 productivity of faculty**

Sr. No	Authors Name	No. Of Publications	% Age
1	Dr. M.S.Shingare	259	33.47 %
2	Dr.Arbad Balasaheb Ramrao	120	15.51 %
3	Dr.Gill.C.H.	103	13.31 %
4	Dr.Bapurao B. shingate	80	10.33 %
5	Dr.R.A.Mane	70	9.04 %
6	Dr.Machindra karbhari Lande	57	7.36 %
7	Dr.Trimbak Kamaji Chondhekar	33	4.27 %
8	Dr.Sunil Govind Shankarwar	31	4.01 %
9	Dr.S.T.Gaikwad	7	0.91 %
10	Dr.Anjali S. Rajbhoj	6	0.75 %
11	Dr.Bhaskar R.Sathe	5	0.65 %
12	Mrs.Chavan Anusaya Shiram	2	0.26 %
13	Mr.S.R. Sonone	1	0.13 %
		<b>Total- 774</b>	<b>100</b>

### 6. Findings

The following findings are drawn from the study.

- 1) The number of publications has increased consistently from the year 1975 to the year 2012. 25% of the total publications have been made in 2009, 2010, and 2011.
- 2) The majority of the publications are made with 4 authors
- 3) The productivity of faculty in large number of the 259 paper published.
- 4) The majority of the research paper published in journal of heterocyclic chemistry.
- 5) The productivity of the year in large number of 124 papers published.

## **7. Suggestions**

The following suggestions are put forth to further enhance the quality of research work in chemistry.

- 1) The scientists should produce high quality research papers and publish these in the journals having high impact factor.
- 2) As the research has become interdisciplinary, more and more emphasis should be on collaborative research.
- 3) More and more research paper should be written in collaboration with other departments of the university and also with foreign institutes to give research work world recognition.

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