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Scientometric Portrait of Prof.Kasi.Pitchumani: An organic chemistry catalyst

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Abstract

This paper analyses the publication productivity of Professor Dr. Kasi.Pitchumani, M.Sc., Ph.D., D.Sc. Vice-Chancellor of Manonmaniam Sundaranar University, Tirunelveli. The data were retrieved from Google Scholar by using Publish or Perish software. The study finding indicates that Prof.Kasi.Pitchumani has produced 229 scholarly publications with 159 journal articles. He has produced an average of five publications each year almost all 98.2% of his publication were multiple authored and he has collaborated with 687 researchers. Prof. Kasi.Pichumani's scientific articles are published in 35 different Journals; filtering the Bradford's law of scattering. His publications have received 4414 citations and since 2014 he has 2483 citations and an H index of 34, I10 index of 127. These findings suggest, among other things, that his research efforts have concentrated largely on the organic chemistry Catalyst. He is eminently qualified to be taken as a role model for the younger generation to emulate. He is undoubtedly one of the most outstanding scientists in India.

Keywords: Scientometric analysis, Kasi.Pitchumani, Citation, Google Scholar, Publish or Perish.

Introduction

Dr. K. Pitchumani, M.Sc., Ph.D., D.Sc. Vice-Chancellor of Manonmaniam Sundaranar University, Tirunelveli. Dr. K. Pitchumani, was born in Sankarankoil from Tirunelveli District. He had completed his B.Sc. Chemistry from St. Xavier's College and M.Sc. Chemistry from V.O.C College, Tuticorin, Ph.D. and D.Sc degrees in Chemistry at Madurai Kamaraj University, Madurai. His areas of research interest are Green Chemistry, Catalysis, Sensors, Supramolecular Chemistry, Organic Photochemistry and Nanomaterials. Dr. K. Pitchumani had a rich teaching experience of 37 years and was CSIR Emeritus Scientist in School of Chemistry, Madurai Kamaraj University, Madurai. He had also worked as Visiting Professor in Academy of Sinica, Taipei, Tokyo Institute of Technology, Japan and Tulane University, USA. He is also experienced in University administration having functioned as Registrar in-charge and Chancellor Nominee in Syndicate and Senate of Madurai Kamaraj University. In the year 2016, he was awarded UGC Emeritus Professorship in Chemistry. He was also a recipient of TANSA award in 2003 under Chemical Sciences.

One important approach used in evaluating research productivity is scientometric analysis. This is a technique that offers a set of measures for studying the structure and process of scholarly communication (Hess). It is concerned with the growth, structure, interrelationship and productivity of scientific disciplines (Hood and Wilson 2001). Scientometric analysis of individual scholars (also known as scientometric portrait) provides an estimate of scholar's research productivity over a given period of time and helps to understand individual's scientific calibre. Such studies deal with the biographical study of individual scholars and correlate this with the bibliographical analysis of their publications or academic and scientific achievements (Sangam and Savanur) in order to reveal the scientific image of an individual scholar. Generally, scientometrics offers a non-reactive way of measuring research productivity.

Scientometrics is concerned with the quantitative features and characteristics of science and scientific research. The term had gained wide recognition by the foundation in 1978 of the journal *Scientometrics* by Tibor Braun in Hungary and currently from Amsterdam. According to its subtitle, *Scientometrics* includes all quantitative aspects of science, communication in science, and science policy (Wilson, 2001). Bio-bibliometrics is a term that was first coined by Sen and Gan (1990) to mean the quantitative and analytical method for discovering and establishing functional relationships between bio data and biblio-data elements. Bio-bibliometric is a study in which we statistically analyze publications of an individual, a department, or a subject of any field. It is a quantitative and analytical method in which we try to establish a functional relation between bio-data of an individual and his biblio-data. Mathematical and statistical techniques are used to study a publication's pattern, preferences, author's collaboration and chronological distribution of publications (Qayyum & Naseer, 2013). Kalyane and Kalyane (1993) first used the phrase 'Scientometric Portrait' to carry out bio-bibliometric studies on scientists. The present study centres on the contributions Jeffrey C. Hall, an American scientist, who won the Nobel Prize 2017 for Medicine for their discoveries of "molecular mechanisms controlling the circadian rhythms.

Methods

Professor Kasi.Pitchumani complete biography was retrieved in the year of 1972-2019 from Google Scholar by using Pop (Publish and Perish) software. Publish and perish retrieved various statistics and merits for individual authors productivity of publication. Professor Kasi. Pitchumani curriculum vitae was used to verify some of the retrieved data and obtain biographical information. The data were retrieved in the form of MS Excel.

Result and Discussion

Publication Productivity

Professor Kasi.Pitchumani has produced a total of 229 scholarly publications with include 159 (69.43%) Journal articles, 4 book chapters (1.74%) and 66 (28.82%) conference proceedings. His first five publications were in the year 1979. (Table 1) Ha has produced scholarly publications

each year except 1983 and 1984. On average, he has contributed five papers in each year and maximum number of 54 publications was produced 2014-2019 followed by 54 articles in 2009-2013 and 38 in the year of 1994-1998. These 15 years is most productive years account for nearly 103 articles all of his articles.

Table 1

Types of publications produced

| No | Sources | No of publications | Percentage |
|----|------------------|--------------------|------------|
| 1 | Journal articles | 159 | 69.43 |
| 2 | Book chapters | 4 | 1.74 |
| 3 | Proceedings | 66 | 28.82 |
| | Total | 229 | 100 |

Professor Kasi.Pitchumani total productivity of life spans the highest publication was 7th and 8th quinquennial periods i.e. 2009-2019 each 54 articles followed by 4th quinquennial periods i.e. 1994-1998 with 38 papers followed by 1999- 2003 with 37 papers produced. Nearly 47% of his publication was produced during the last 10 years. Professor Kasi.Pitchumani publication productivity has been increased after the year 1993.

Table 2

Chronological publication productivity and collaboration patterns

| Quinquenium years | Single authors | Double authors | Three authors | Four authors | Five authors | Six authors | Seven authors | Total |
|-------------------|----------------|----------------|---------------|--------------|--------------|-------------|---------------|-------|
| 1979-1983 | - | 6 | 1 | - | - | - | - | 7 |
| 1984-1988 | - | 1 | - | - | - | - | - | 1 |
| 1989-1993 | - | 3 | 5 | 2 | - | - | - | 10 |
| 1994-1998 | 1 | 9 | 11 | 14 | 3 | - | - | 38 |
| 1999-2003 | 1 | 12 | 15 | 7 | - | 1 | 1 | 37 |
| 2004-2008 | 2 | 18 | 4 | 4 | - | - | - | 28 |
| 2009-2013 | 3 | 19 | 23 | 8 | 1 | - | - | 54 |
| 2014-2019 | - | 16 | 26 | 10 | 2 | - | - | 54 |

Professor Kasi.Pitchumani has collaborated with 687 local and foreign researchers. Most prominent collaborators with 5 or more authorship are C.Srinivasan (22), A.Dhakshinamoorthy (14), P.Suresh (12) S.Annalakshmi (10), and K. Kanagaraj (10). (Table 3)

Table 3**Top Co-authors**

| Co-authors name | No of co authored publications | No of publications as 1 st authors |
|--------------------|--------------------------------|---|
| C.Srinivasan | 22 | 4 |
| A.Dhakshinamoorthy | 14 | 9 |
| P.Suresh | 12 | 4 |
| S.Annalakshmi | 10 | 9 |
| K.Kanagaraj | 10 | 8 |

Selection of journals is an important factor. Professor Kasi.Pichumani's published his articles and proceedings in over 35 different science journals with top ranking being the Tetrahedron Letters 38 articles journal of Chemical society 15 articles, Journal of Organic Chemistry 10 articles, journal of Photo Chemistry and Photo Biology: A chemistry 9 articles, ACS sustainable chemistry and engineering 7 articles, Catalysis letter 7 articles, Acta Crystallographic a section E Structure reports 6 articles (Table 4). This findings indicate that Professor Kasi.Pichumani were published top rank and highly H index journals.

Table 4**Channels of communications**

| No | Journal title | Country | H index | No of articles |
|----|---|-------------|---------|----------------|
| 1 | Tetrahedron Letters | UK | 155 | 38 |
| 2 | Journal of chemical society | USA | 514 | 15 |
| 3 | journal of organic chemistry | USA | 203 | 10 |
| 4 | Journal of photo chemistry and photo biology: a chemistry | Netherlands | 141 | 9 |
| 5 | ACS sustainable chemistry and engineering | US | 50 | 7 |
| 6 | catalysis letter | US | 106 | 7 |
| 7 | Acta crystallographic a section E structure reports | UK | 33 | 6 |
| 8 | bulletin of chemical Chemical society of Japan | Japan | 87 | 6 |
| 9 | A European journal of organic chemistry | UK | 134 | 5 |
| 10 | Synthetic communication | US | 66 | 5 |
| 11 | Applied catalysis A general | Netherlands | 183 | 4 |
| 12 | Catalysis science and technology | UK | 71 | 4 |
| 13 | Journal of molecular catalysis a chemical | Netherlands | 87 | 4 |

| | | | | |
|----|--------------------------------------|-------------|-----|---|
| 14 | Green chemistry | UK | 169 | 4 |
| 15 | Journal of inclusion phenomena and | Netherlands | 52 | 4 |
| 16 | Indian academic of science | Netherlands | 50 | 3 |
| 17 | Analytical science | Japan | 62 | 3 |
| 18 | Asian journal of organic chemistry | Germany | 29 | 3 |
| 19 | Bio organic medical science | UK | 136 | 2 |
| 20 | Catalysis communication | Netherland | 101 | 2 |
| 21 | New journal of chemistry | UK | 106 | 2 |
| 22 | Medicinal chemistry research | US | 35 | 2 |
| 23 | Natural product research | UK | 40 | 2 |
| 24 | Alderchimica Acta | US | 57 | 1 |
| 25 | Journal of porous materials | Netherlands | 45 | 1 |
| 26 | Advanced synthesis and catalysis | UK | 137 | 1 |
| 27 | Biosensors | Switzerland | 21 | 1 |
| 28 | Canadian journal of chemistry | Canada | 62 | 1 |
| 29 | Helvetica Chimica Acta | USA | 78 | 1 |
| 30 | Indian Geotechnical journal | India | 7 | 1 |
| 31 | Geosynthetics International | UK | 41 | 1 |
| 32 | Journal of geotechnical engineering | US | 118 | 1 |
| 33 | Journal of American chemical society | US | 514 | 1 |
| 34 | journal of material chemistry | UK | 247 | 1 |
| 35 | journal of magnetic resonance | US | 106 | 1 |
| 36 | | | | |

Bradford's Law of Scattering

The journal derived from Bradford's Law of Scattering $1: n: n^2$, where 'n' is a multiplier (Vickery). In this study, the total numbers of articles were divided in to three equal zones in which 2 journals covered 53 articles, next 8 journals covered 53 articles and next 25 journals covered 53 articles. That means the ratio of journals in each zone was 2:8:25 (Table 5) the mean value of Bradford's multiplier was therefore computed as $(8/4+25/8) = 2.56$. Hence, the expected ratio in three successive zones becomes $2:2 \times 2.2:2 \times 2.5 \times 2.5$ which is 2:15.6:25. The number of journals in the second zone is slightly higher than the expected value of 15.6. The percentage of error was only 3.1% which indicates adherence to the Bradford's Law.

Table 5 Bradford's Law distribution

| Zone | No. of articles | No. of journals |
|--------------|-----------------|-----------------|
| I | 53 | 2 |
| II | 53 | 8 |
| III | 53 | 25 |
| Total | 159 | 35 |

Professor Kasi.Pitchumani total citation is 4414. He published his articles in 35 highly reputed journals with high H index. An overall total citation here shorted some leading articles which contain highest citation. (Table 6). The findings confirm that the maximum numbers of articles were published in Tetrahedron Letters and Green Chemistry with 164 and 93 citations.

Table 6**Citation profile of significant**

| No | Articles | Journals | Year | Citation |
|----|---|---|------|----------|
| 1 | Solvent-free multicomponent synthesis of pyranopyrazoles: per-6-amino- β -cyclodextrin as a remarkable catalyst and host | Tetrahedron Letters | 2010 | 164 |
| 2 | Syntheses of 5-Substituted 1H-Tetrazoles Catalyzed by Reusable CoY Zeolite | The Journal of organic chemistry | 2011 | 119 |
| 3 | Simple and efficient reduction of nitroarenes by hydrazine in faujasite zeolites | Applied Catalysis A: General | 2004 | 112 |
| 4 | CuII β -Hydrotalcite as an Efficient Heterogeneous Catalyst for Huisgen [3+2] Cycloaddition | A European journal of organic chemistry | 2009 | 107 |
| 5 | Palladium nanoparticles supported on triazine functionalized mesoporous covalent organic polymers as efficient catalysts for Mizoroki β -Heck cross coupling reaction | Green Chemistry | 2014 | 93 |
| 6 | Zn ²⁺ -K10-clay (claydic) as an efficient water-tolerant, solid acid catalyst for the synthesis of benzimidazoles and quinoxalines at room temperature | Tetrahedron letters | 2011 | 90 |
| 7 | Per-6-amino- β -cyclodextrin as an | The Journal of organic | 2008 | 85 |

| | | | | |
|----|---|--|------|----|
| | Efficient Supramolecular Ligand and Host for Cu(I)-Catalyzed N-Arylation of Imidazole with Aryl Bromides | chemistry | | |
| 8 | Remarkable product selectivity during photo-fries and photo-claisen rearrangements within zeolites | Journal of the American chemical and society | 1996 | 82 |
| 9 | Clay entrapped nickel nanoparticles as efficient and recyclable catalysts for hydrogenation of olefins | Tetrahedron Letters | 2008 | 79 |
| 10 | Modification of chemical reactivity upon cyclodextrin encapsulation:: Asymmetric bromination of chalcone and benzylideneacetone | Tetrahedron letters | 1994 | 76 |

Conclusion

The scholarly publication productivity of Professor Kasi.Pitchumani is found to be an outstanding contribution in the field of “Chemistry” in the last 40 years. He has been active in research despite his many academic responsibilities. Professor Kasi.Pitchumani prefers to work in team and he has high degree of collaboration with institutions, national and international level. The high rate of citation to his papers proves the usefulness and impact of his scientific works in the field of chemistry. His H index of 34 and i10 index of 127 after 40 years of scientific activity characterizes his as a success as a scientist in the field of Chemistry.

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