

# **BIODATA**

## **General Information:**



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|----|---------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Name                      | : | <b>Dr. Sunil Govind Shankarwar</b>                                                                                                                              |
| 2. | Designation               | : | Professor & Head                                                                                                                                                |
| 3. | Date of Birth             | : | 14-09-1970                                                                                                                                                      |
| 4. | Specialization            | : | Physical Chemistry                                                                                                                                              |
| 5. | E-mail ID                 | : | shankarwar_chem@yahoo.com                                                                                                                                       |
| 6. | Residential Address       | : | Plot No. 24, Jaiswal Plotting,<br>Near Hanuman Tekadi, Pahadsingpura,<br>Chhatrapati Sambhajnagar 431 004.                                                      |
| 7. | Total Teaching Experience | : | 28 years                                                                                                                                                        |
| 8. | Research Area             | : | <ul style="list-style-type: none"><li>• Coordination Chemistry</li><li>• Chemical Kinetics</li><li>• Homogeneous and Heterogeneous Catalysis</li></ul>          |
| 9. | Subject Taught            | : | <ul style="list-style-type: none"><li>• Chemical Kinetics and Catalysis</li><li>• Solid State Chemistry</li><li>• Phase Rule</li><li>• Photochemistry</li></ul> |

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## **A. Academic Qualification:**

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| Exam.  | Board/University           | Subject                         | Year & Month  | Division & Merit | % of Marks |
|--------|----------------------------|---------------------------------|---------------|------------------|------------|
| S.S.C  | Nagpur                     | Maths, Social science, Science  | M/A 1987      | First            | 62.57      |
| B. Sc. | Dr. B. A. M. U. Aurangabad | Physics, Mathematics, Chemistry | M/A 1992      | First            | 61.62      |
| M. Sc. | Dr. B. A. M. U. Aurangabad | Physical Chemistry              | M/A 1994      | First            | 64.00      |
| B. Ed  | Dr. B. A. M. U. Aurangabad | Math, Science                   | April 1995    | First            | 65         |
| Ph. D. | Dr. B. A. M. U. Aurangabad | Chemistry                       | December 2002 | Awarded          | --         |

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**B. Research Experience and Training:**

| Sr.No. | Research stage                        | Title of work/thesis                                                      | University where the work was carried out.         |
|--------|---------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------|
| 1.     | Ph.D.                                 | “Studies on the Bivalent and Trivalent Metal Complexes with Schiff bases” | Dept. of Chemistry, Dr.B.A.M.University Aurangabad |
| 3.     | Publications (Give a list separately) | <b>(Pl. see Annexure-I)</b>                                               | -                                                  |

**C. Research Guidance:**

| Sr.No | Name of the candidate | Research Topic                                                                                                                     | Date of Registration | Remarks                 |
|-------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------|
| 1     | Mr. V.A.Shelke        | Synthesis and Characterization of lanthanide (III)metal complexes of O, N/S donor ligands.                                         | Oct. 2008            | Awarded March 2012      |
| 2     | Mr. L.D.Chavan        | Catalytic and Structural studies of some Heteropoly acids and Polyoxometalates                                                     | July 2012            | Awarded January 2017    |
| 3     | Mr. B.B.Nagolkar      | Kinetic and Mechanistic study of oxidation of some clinically important drugs by new oxidants                                      | Jan.2013             | Awarded June 2017       |
| 4     | Ms. S.S.Patil         | Synthesis of bioactive Macrocyclic ligands and their coordination behavior with transition metal/lanthanides                       | July 2009            | Working                 |
| 5     | Mr.S.P.Najan          | Synthesis and characterization of N, O/S bioactive donor ligands and their metal complexes                                         | July 2012            | Awarded 15April 2021    |
| 6     | Mr. S. P. Dhonde      | Synthesis and Characterization of bioactive ligands and their metal complexes                                                      | Dec.2014             | Working                 |
| 7     | Mr. D. S. Aher        | Synthesis and characterization of some supported and unsupported heteropoly acid and their applications in organic transformation. | Jun-2018             | Awarded 27 January 2023 |
| 8     | Mr. K. R. Khillare    | Synthesis, characterizations                                                                                                       | Jun-2018             | Working                 |

|    |                     |                                                                                                                                                                     |               |         |
|----|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|
| 9  | Mr. S.R. Chavan     | and applications of some keggins-type heteropoly acid. Studies on physicochemical properties of some keggins type heteropoly acid and their catalytic applications. | November-2021 | Working |
| 10 | Ms. S. D. Sukale    | Catalytic and structural studies of some alkali metal substituted heteropoly acid salts.                                                                            | November-2021 | Working |
| 11 | Ms. R. H. Astaputre | Synthesis, characterization and applications of transition metal substituted keggins type heteropoly acid.                                                          | November-2021 | Working |

**D. Academic Staff College orientation / Refresher Course attended:**

| Sr. No. | Name of the course/<br>summer school     | Place                                                                            | Duration                 | Sponsoring Agency |
|---------|------------------------------------------|----------------------------------------------------------------------------------|--------------------------|-------------------|
| 1.      | Orientation course in Chemistry          | Academic staff college, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad | 02/05/1998 to 30/05/1998 | UGC               |
| 2.      | Refresher course                         | Academic staff college, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad | 05/04/2009 to 25/04/2009 | UGC               |
| 3.      | Refresher course in Chemistry            | Academic staff college, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad | 03/12/2009 to 23/12/2009 | UGC               |
| 4.      | Short term course on Energy Conservation | Academic staff college, Sant Gadge Baba Amravati University, Amravati            | 16/07/2012 to 21/07/2012 | UGC               |

***E. Research Projects:***

| <b>Sr. No.</b> | <b>Title</b>                                                                                                                                   | <b>Agency</b>                           | <b>Period</b>                       | <b>Grant/ Amount mobilized (Rs. Lakh)</b> |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------|-------------------------------------------|
| 1.             | Synthesis of macro cyclic ligands and their coordination behavior with transition metals and lanthanides.                                      | UGC<br>New Delhi                        | Two year<br>1/02/2010-<br>1/02/2012 | 1.25                                      |
| 2.             | Synthesis and characterization of supported and unsupported kegglin type heteropoly acids and their catalytic application in organic reaction. | Dr. B.A.M.<br>University<br>Aurangabad, | 2019-2021                           | 1.50                                      |

***F. Seminar, Conferences organized:***

| <b>Sr. No.</b> | <b>Title of Lecture / Academic session</b> | <b>Title of Seminars/Conferences</b>                                       | <b>Organized by</b>                                                           | <b>National/ International</b> |
|----------------|--------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------|
| 1              | Treasurer                                  | National seminar on “Advances in material chemistry”                       | Department of Chemistry<br>Dr. B.A.M. University<br>Aurangabad 28-29 Jan 2011 | National                       |
| 2              | Organizing Secretary                       | National Conference on Frontiers in Chemical Sciences and Drug Development | Department of Chemistry<br>Dr. B.A.M. University<br>Aurangabad 2017           | National                       |

**G. Seminar, Conferences, Symposia, Workshop etc. attended:**

| <b>Sr. No.</b> | <b>Seminars/Conferences</b>                                                             | <b>Period</b>          | <b>Organizing Body/place</b>                                      |
|----------------|-----------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------|
| 1.             | Indian Council of Chemists<br>Fifteenth Conference of the Council                       | 24 to 26<br>Oct.1996   | Department of Chemistry Dr.<br>B. A. M. University<br>Aurangabad. |
| 2.             | Workshop in Chemistry                                                                   | 17July.1999            | Yeshwant Mahavidyalaya<br>Nanded                                  |
| 3.             | Workshop in Chemistry                                                                   | 09 Oct.1999            | Yeshwant Mahavidyalaya<br>Nanded.                                 |
| 4.             | Workshop in Chemistry                                                                   | 9 Dec 1999             | Maharashtra Udaygiri<br>College Udgir.                            |
| 5.             | State Level Workshop in<br>Chemistry on state<br>Eligibility Test (SET) in<br>Chemistry | 12 August 2002         | Yeshwant Mahavidyalaya<br>Nanded.                                 |
| 6.             | State Level Workshop in<br>Chemistry on state<br>Eligibility Test (SET) in<br>Chemistry | 17 to 20 July 2003     | Dnyanopasak College<br>Parabhani                                  |
| 7.             | Kinetic and mechanistic<br>studies of chemical and<br>biochemical transformations       | 26-27 February<br>2005 | Department of Chemistry<br>Dr.B.A.M. University<br>Aurangabad     |
| 8.             | National Seminar on<br>Frontiers of Chemical<br>Sciences.                               | 12 to 13 March 2005    | Women College Aurangabad                                          |
| 9.             | 43 <sup>rd</sup> Annual Convention of<br>Chemists                                       | 23 to 27 Dec. 2006     | Department of Chemistry<br>Dr.B.A.M. University<br>Aurangabad     |

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|-----|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------|
| 10. | International Conference on<br>“Recent Trades in Drug<br>Design”                                                             | 21 to 24 Dec.2007                                   | Department of Chemistry<br>Dr.B.A.M. University<br>Aurangabad           |
| 11. | Regional Workshop on IPR                                                                                                     | 23 Oct.2007                                         | Department of Chemistry<br>Dr.B.A.M. University<br>Aurangabad           |
| 12. | National level Conference<br>on “Recent Trends in<br>Chemical Sciences”                                                      | 1 <sup>st</sup> and 2 <sup>nd</sup> Feb 2008        | S.B.E.S. College of Science<br>Aurangabad.                              |
| 13. | National Seminar on recent<br>advances in Nano-sciences                                                                      | 23 <sup>rd</sup> to 24 <sup>th</sup> Feb2008        | Department of Chemistry<br>Dr.B.A.M. University<br>Aurangabad           |
| 14. | National Seminar on<br>“Recent Advances in<br>Chemical Kinetics,<br>Coordination and Nano-                                   | 23 <sup>rd</sup> & 24 <sup>th</sup><br>January 2009 | Rajashri Shahu<br>Mahavidyalaya<br>Latur.                               |
| 15. | National seminar on<br>Biocatalysis and Biomimetic<br>catalysis in organic synthesis                                         | 20-21Mar 2009                                       | Department of Chemistry<br>Dr.B.A.M. University<br>Aurangabad           |
| 16. | Analytical Chemistry<br>Teacher’s and Researcher’s<br>Association                                                            | 31 July 2009                                        | S.B.E.S. College of Science<br>Aurangabad                               |
| 17. | 11 <sup>th</sup> National conference of<br>Indian Association for<br>science Fiction studies on<br>science fiction in Indian | 14-15 Nov 2009                                      | S.B.E.S. College of Science<br>Aurangabad.                              |
| 18. | National level Seminar on<br>Nanotechnology                                                                                  | 3 April 2010                                        | Deogiri college Aurangabad                                              |
| 19. | Science Academic lecture<br>workshop on “probing<br>electronic states in molecule<br>and molecular materials”                | 21-25 Oct 2010                                      | Department of Chemistry<br>Dr.B.A.M. University<br>Aurangabad           |
| 20. | Lecture workshop on<br>exploring recent horizons in<br>chemical science.                                                     | 21-22 Jan 2011                                      | Department of Chemistry<br>Dr.B.A.M. University<br>Sub-centre Osmanabad |

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|-----|---------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------|
| 21. | National seminar “Recent instrumental techniques in Co-ordination chemistry”                      | 23 Jan 2011          | Shri chhatrapati shivaji college Omerga                                  |
| 22. | National seminar on “Advances in material chemistry”                                              | 28-29 Jan 2011       | Department of Chemistry<br>Dr.B.A.M. University<br>Aurangabad            |
| 23. | National conference “Advanced Tools in chemical analysis”                                         | 26-27 August 2011    | Deogiri college Aurangabad                                               |
| 24. | National Conference on “Sustainable Chemistry Challenges and Opportunities.                       | 9-10 Jan 2012        | Department of Chemistry<br>Dr.B.A.M. University<br>Sub-center Osmanabad. |
| 25. | National seminar on “ Science for shaping the future of India”                                    | 22-23 Aug 2012       | Department of Chemistry<br>Dr.B.A.M.University<br>Aurangabad             |
| 26. | National conference on “Current trends in chemical research”                                      | 30-31 Aug 2012       | Vasantro Naik College,<br>Aurangabad                                     |
| 27. | 49 <sup>th</sup> Annual convention of chemist 2012                                                | 12-15 Dec 2012       | NITTTR Bhopal                                                            |
| 28. | National conference on “Recent Advancements in chemical science research an Indian perspective”   | 28-29 Dec 2012       | Shrikrishna Mahavidyalaya<br>Gunjoti                                     |
| 29. | National Seminar on Role of Chemistry in Eco-friendly organic synthesis                           | 19-20 September 2013 | S. B. E. S. College of science<br>Aurangabad                             |
| 30. | National seminar on Redefining the Role of Chemistry in the Era of Modern Science                 | 27-28 Sept 2013      | K. S. K. College, Beed                                                   |
| 31. | 2 <sup>nd</sup> National workshop on Material Chemistry [Catalytic Materials] NWMC-2013 (CAT-MAT) | 22-23 November 2013  | Bhabha Atomic Research<br>Centre Mumbai                                  |

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|-----|------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------|
| 32. | Workshop On Awareness of<br>Anti-plagiarism software.                                                | 1-12 Dec 2013              | Dr.B.A.M.University<br>Aurangabad                                                                        |
| 33. | National Conference on<br>"Indian Chemical Society"<br>92, Acharya Prafulla<br>Chandra Road, Kolkata | 4-7 December 2013.         | Department of Chemistry &<br>Centre for Advanced Studies<br>in Chemistry Punjab<br>University Chandigarh |
| 34. | 51 <sup>st</sup> Annual Convention of<br>Chemist 2014                                                | 9-12 December 2014         | Department of Chemistry<br>Kurukshetra University,<br>Kurukshetra                                        |
| 35. | Science Academics Lecture<br>Workshop on "Fundamental<br>Concepts in Chemical<br>Sciences"           | 21 – 24 March 2014         | Department of Chemistry<br>Dr.B.A.M.University<br>Aurangabad                                             |
| 36. | Pre-Science Congress –<br>2014, Conference on<br>Science & Technology for<br>Human Development       | 30-31 December 2014        | JSCA Aurangabad Chapter,<br>Dr.B.A.M. University<br>Aurangabad                                           |
| 37. | Training Programme on<br>Awareness of Scientific<br>Database                                         | 22 <sup>nd</sup> July 2014 | Dr.B.A.M.University<br>Aurangabad                                                                        |
| 38. | Analytical Chemistry<br>Teachers and Researchers<br>Association                                      | 18 Jan 2015                | Dr. Rafiq Zakaria Campus-I.<br>Maulana Azad College<br>Aurangabad.                                       |
| 39. | University Industry<br>Interaction Summit 2015                                                       | 29 – 30 October 2015       | Dr.B.A.M.University<br>Aurangabad                                                                        |
| 40. | 3 <sup>rd</sup> National workshop on<br>Material Chemistry, NWM<br>C - 2015                          | 20-21 November 2015        | Bhabha Atomic Research<br>Centre, Mumbai                                                                 |
| 41. | One Day Workshop On<br>LATEX For project,<br>Seminar, Thesis Typesetting                             | 5 Mar 2016                 | Dr.B.A.M.University<br>Aurangabad                                                                        |

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|-----|------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------------------------------------------|
| 42. | 35 <sup>th</sup> Annual National Conference of Indian Council of Chemist                       | 22-24 Dec 2016                                     | Haribhai V. Desai College, Pune.                             |
| 43. | Contributed in University level AVISHKAR-2016 .                                                | 27-28 Dec 2016                                     | Dr.B.A.M.University Aurangabad                               |
| 44. | Analytical Chemistry Teachers and Researchers Association associated with Journal of Medicinal | 8 Jan 2017                                         | Dr. Rafiq Zakaria Campus-I. Maulana Azad College Aurangabad. |
| 45. | Contributed in the National Science Day-2017                                                   | 27-28 Feb 2017                                     | Dr.B.A.M.University Aurangabad                               |
| 46. | National Conference on Frontiers in Chemical Sciences and Drug Development                     | 17-18 March 2017                                   | Department of Chemistry Dr.B.A.M.University Aurangabad       |
| 47. | Contributed in University level AVISHKAR-2017.                                                 | 23-25 Dec 2017                                     | Dr.B.A.M.University Aurangabad                               |
| 48. | Contributed in University level AVISHKAR-2018.                                                 | 03-05 Jan.2019                                     | Dr. B A.M.University Aurangabad                              |
| 49. | Awareness program of McGraw Hill E-Books                                                       | 10thJanuary2019                                    | Dr. B. A. M. University Aurangabad                           |
| 50. | Internal Symposium on “Exploring new horizons in chemical sciences”                            | 10 <sup>th</sup> and 12 <sup>th</sup> January 2019 | Deogiri College Aurangabad                                   |
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**Resource Person/ Chaired Person in Conference and Seminars:**

| Sr. No | Seminars/Conferences                                                                           | Period                                        | Organizer/Place                                          |
|--------|------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------------------------|
| 1.     | National conference on “Recent Advancements in chemical science research an Indian perspective | 28-29 <sup>th</sup> Dec 2012                  | Shrikrishna Mahavidyalaya Gunjoti                        |
| 2.     | Refresher course in Chemistry/ Chemical technology/ Pharmacy                                   | 25 <sup>th</sup> Aug 2012                     | HRDC, Aurangabad                                         |
| 3.     | Refresher course in Chemistry/ Chemical technology/ Pharmacy                                   | 23 <sup>rd</sup> July 2013                    | HRDC, Aurangabad                                         |
| 4.     | 106 <sup>th</sup> Orientation program                                                          | 27 <sup>th</sup> Dec 2014                     | HRDC, Aurangabad                                         |
| 5.     | Pre-Ph.D. course work                                                                          | 2014                                          | Department of Chemistry, Dr. BAMU, Aurangabad            |
| 6.     | Pre-Ph.D. course work                                                                          | 08 <sup>th</sup> June 2016                    | Department of Chemistry, Dr. BAMU, Aurangabad            |
| 7.     | Recent trends in Nanoscience and nanotechnology for clean and sustainable development          | 03 <sup>th</sup> Feb 2018                     | Vasant Mahavidyalaya, Kaij, Beed                         |
| 8.     | Exploring new horizons in chemical sciences-ENHCS-2019                                         | 10 <sup>th</sup> to 12 <sup>th</sup> Jan 2019 | Deogiri College Aurangabad                               |
| 9.     | Refresher course in Environmental studies and Sustainable Development                          | 01 <sup>st</sup> to 13 <sup>th</sup> Oct 2019 | HRDC, Aurangabad                                         |
| 10.    | Innovative Nano material has better future in emerging sciences (INBFEBs-2020)                 | 20-21 January 2020                            | MJM Arts commerce and science college, Karanjali, Nashik |
| 11.    | Pre-Ph.D. course work                                                                          | 08 <sup>th</sup> Sept 2022                    | HRDC, Aurangabad                                         |

### **H. Teaching Experience**

| <b>Sr.No.</b> | <b>Course taught</b> | <b>Name of University/ college / institution</b>                   | <b>Duration</b>              |
|---------------|----------------------|--------------------------------------------------------------------|------------------------------|
| 1             | Under graduate       | 1) D.S.M's. Arts, COM.& Science college Jintur                     | 7 August 1995 to March 2006  |
| 2             | Post Graduate M.Sc.  | Dr. Babasaheb Ambedkar Marathwada University, Aurangabad           | 04 to 31 March 2006          |
| 3             | Post Graduate M.Sc.  | Dr. Babasaheb Ambedkar Marathwada University, sub-centre Osmanabad | 1 April 2006 to 30 June 2008 |
| 3             | Post Graduate M.Sc.  | Dr. Babasaheb Ambedkar Marathwada University, Aurangabad           | 1 July 2008 to till today    |

### **Special Achievements**

- 1) Listed in World Scientist Rankings- **AD Scientific Index-2023**
- 2) Listed in World Scientist Rankings- **AD Scientific Index-2022**

### **I. Extension activities:**

- 1) Coordinator of students study tour for the year 2009-10.
- 2) Officer in P. G. CAS-Centre Science examination March/April, 2010.
- 3) Coordinator of Refresher course UGC, ASC Aurangabad 2015.
- 4) Organizing Secretary National Conference on Frontiers in Chemical Sciences and Drug Development 2017
- 5) Treasurer of Teachers credit co-operative society, Dr. B. A. M. U. A'bad (2015-20)
- 6) Treasurer of National seminar on Advances in material Chemistry 2011
- 7) Life member of Society for materials chemistry BARC Mumbai 2013
- 8) Department Coordinator of Avishkar 2017-18.
- 9) Departmental IQAC Coordinator member since 2009.
- 10) Judge for Avishkar at NMU Jalgaon, 2010
- 11) Evaluator for National Science day celebration at BAMU Aurangabad 2017-18
- 12) Examiner for Ph. D. thesis evaluation of Gulbarga, Nagpur and Amravati Universities.

- 13) Member of syllabus revision committee for M. Sc. I to IV Semester Physical Chemistry 2013.
- 14) Student counseling for SET/ NET and other competitive examination.
- 15) Work as presiding officer, Gangapur, Dist. Aurangabad for Loksab Election of Govt of India.
- 16) Work as presiding officer, Graduates Constituency Elections 2012
- 17) Work as presiding officer, Graduates Constituency Elections 2022
- 18) Member of syllabus revision committee for M. Sc. I to IV Semester Physical Chemistry 2016.
- 19) Member of Ad-hoc Board of Studies in Chemical Sciences 2021-22 S.R.T.M. University Nanded.
- 20) Member of syllabus revision committee for M. Sc. I to IV Semester Physical Chemistry 2022.
- 21) Departmental Coordinator of Avishkar- 2022.
- 22) Member of Observers committee Avishkar-2022
- 23) Worked as a Chairman and Member of various committees of Dr. B.A.M. University, Aurangabad
- 24) Participation in campus cleaning, Tree plantation, Blood donation camp.
- 25) Actively involved in the preparation of DST-FIST level-I programme
- 26) Member of syllabus revision committee for M. Sc. I to IV Semester Physical Chemistry 2022
- 27) BOS Member of Dr. B.A.M. University, Aurangabad from 2022
- 28) RRC Member of Dr. B.A.M. University, Aurangabad from 2022
- 29) Member of Observers committee Avishkar-2023-24
- 30) Member of Observers committee Avishkar-2022-24
- 31) Departmental Coordinator of PM-USHA Cell -2024

### **J. Extension work/community services:**

- Community work such as values of national integration, secularism, democracy, socialism, humanism, peace, flood, drought relief, small family norms etc.

- Worked as a Polling Officer for Vidhan Sabha and Lok Sabha elections in 1999.
- Student counseling for NET and SET examination
- Worked as a Zonal Officer for Lok Sabha elections in 2024.

#### **K. Any Other Information:**

- Examiner of M.Sc I and II Year Exam at Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

#### **L. List of Publications:**

1. *Synthesis and characterization of alumina supported molybdosilicic acid (SiMo<sub>12</sub>/Al<sub>2</sub>O<sub>4</sub>) efficient solid acid catalyst for the synthesis of pyranopyrazole derivatives.* Shital B. Sukale, Dipak S. Aher, Kiran R. Khillare, Laxmikant D. Chavan, and Sunil G. Shankarwar doi.org/10.1080/00397911.2024.2345280 Synthetic Communications.
2. A simple and efficient protocol for the synthesis of quinoxaline derivatives using recyclable H<sub>5</sub>PW<sub>6</sub>Mo<sub>4</sub>V<sub>2</sub>O<sub>40</sub>·14H<sub>2</sub>O catalyst Dipak S. Aher, Kiran R. Khillare, Laxmikant D. Chavan, Vinod A Shelke and **Sunil G. Shankarwar** doi.org/10.1080/00397911.2022.2093645 Synthetic Communications.
3. Cesium salt of 2-molybdo-10-tungstophosphoric acid as an efficient and reusable catalyst for the synthesis of uracil derivatives via a green route Kiran R Khillare, Dipak S Aher, Laxmikant D Chavan, **Sunil G Shankarwar** RSC Advances 11 (54), 33980-33989, **2021**.
4. H<sub>3</sub>PMo<sub>7</sub>W<sub>5</sub>O<sub>40</sub>· 24H<sub>2</sub>O catalyzed access to fused pyrazolopyranopyrimidine derivatives via one-pot multicomponent synthesis: green chemistry Dipak S. Aher, Kiran R. Khillare, Laxmikant D. Chavan, and **Sunil G. Shankarwar** Monatshefte für Chemie-Chemical Monthly, doi.org/10.1007/s00706-021-02868-7 , **2021**.

5. Incorporation of Keggin-based  $H_3PW_7Mo_5O_{40}$  into bentonite: synthesis characterization and catalytic applications Dipak S Aher, Kiran R Khillare, **Sunil G Shankarwar** RSC Advances 11(19), 11244-11254 **2021**.
6. Tungsten-substituted molybdophosphoric acid impregnated with kaolin: effective catalysts for the synthesis of 3,4-dihydropyrimidin-2(1H)-ones via biginelli reaction† Dipak S. Aher, Kiran R. Khillare, Laxmikant D. Chavan and **Sunil G. Shankarwar** RSC Adv., **2021**, 11, 2783–2792.
7. Development and Validation of Rapid Stability-Indicating RP-HPLC Method for Assay and Related Substances of Solifenacin Succinate Rajiv A. Jadhav, Yogeesh M. Sanil, **Sunil G. Shankarwar**, Anil G.Shankarwar, Rajendra P. Pawar,Saroj R. Bembalkar. **Chromatographia An International Journal for SeparationScience** ISSN 0009-5893, Chromatographia DOI 10.1007/s10337-020-03929-5.
8. QuaternaryVanadoMolybdotungstophosphoric Acid [ $H_5PW_6Mo_4V_2O_{40}$ ] Over Natural Montmorillonite as aHeterogeneous Catalyst for the Synthesis 4H-Pyran and Polyhydroquinoline Derivatives. Dipak S.Aher, Kiran R. Khillare, Laxmikant D. Chavan, and **Sunil G. Shankarwar\*** **Chemistry Select** **2020**, 5, 7320 –7331.
9. A simple and green protocol for the synthesis of 3,4-dihydropyrimidin 2(1H)-ones using11-molybdo-1-vanado phosphoric acid as a catalyst under ultrasound irradiation L. D. Chavan,S.N. Deshmukh, **S.G.Shankarwar** **Orbital: The Electronic Journal Of Chemistry Vol.11 No. 5 Sept. 2019**.
10. Synthesis and characterization of tetraaza macrocyclic ligand and it's Co (II), Ni (II), Cu (II), Zn (II) complexes.Sopan A.Najan, Sanjivani S. Patil Bhagwat B. Nagolkar, **Sunil G.Shankarwar** **IJCRT | Volume 6, Issue 1 February 2018**.

11. Synthesis and physico-chemical studies of macrocyclic ligand and Its Co (II), Ni (II), Cu (II), Zn (II) complexes SopanA.Najan1., Machhindra K. Lande and **Sunil G. Shankarwar** **International Journal of Recent Scientific Research Vol. 9, Issue, 2(E), pp. 24078-24082, February, 2018.**
12. Synthesis, Characterization and Biological Study of Schiff Base hydrazone Complexes from Dehydroacetic Acid and 4-Bromobenzohydrazide with Fe(III), Co(II), Ni(II), Cu(II), Zn(II) Metals R. B. Arde, M. A. Raut, **S. G. Shankarwar** and T. K. Chondhekar. **Journal of Chemistry and Chemical Sciences, Vol.8(4), 721-728, April 2018.**
13. Synthesis, Spectral, Thermal And Antimicrobial Studies Of Ce(III), Pr(III), Nd(III), Sm(III), Gd(III), Metal Complexes Of 14-Membered Tetraaza [N4] Macrocyclic Ligand.Sanjeevani S.Patil , B.B. Nagolkar , **S.G.Shankarwar IJCRT | Volume 6, Issue 2 April 2018 2349-5162.**
14. Synthesis, Spectral, Thermal and Antimicrobial Studies of Rare Earth Metal Complexes of 14-Membered Tetraaza [N4] Macrocyclic Ligand.Sanjeevani S. Patil , B.B.Nagolkar, **S.G.Shankarwar .JETIR , Volume 5, Issue 7, 2349-5162 July 2018.**
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