

## Dr. Sandeep S. Kahandal

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<https://sites.google.com/view/sandeepkahandal>

### EDUCATIONAL QUALIFICATION

- Doctorate of Philosophy (Ph.D.) in Chemistry from Institute of Chemical Technology (Mumbai University) April -2013.
- Qualified NET, SET and GATE examinations 2007, 2008, AIR - 253 and 408, and PhD entrance test, IISc Bangalore.
- Stood 1<sup>st</sup> rank in M.Sc. Analytical Chemistry (Pune University)

### CAREER

- **Assistant Professor: 21<sup>st</sup> March 2014- till a date**  
V.P. M's, B. N. Bandodkar College of science, (Autonomous) Thane - 400601, MH, India
- **Assistant Professor: 6<sup>th</sup> June 2013- 20<sup>th</sup> March 2014**  
K. K. Wagh Arts, Commerce, Science and Comp. Science College, Nashik- 422003, MH, India.
- **(Officer) Analysts – (2007-2008)**  
Analytical Development Laboratory, Lupin Pharma. Ltd, Boiser, Thane, 401504, MH, India.
- **Research Publications – 16**  
*Journal of Chemical Sciences, Tetrahedron green chemistry, Catalysis communication, RSC Advances, Tetrahedron Letters, Catalysis Science and Technology, Frontiers in Chemistry, Results in chemistry.*
- **Research Presentations / Invited Talk – 14**

### FELLOWSHIPS/AWARDS/ MEMBERSHIP/ REVIEWER

Year	Name of the Award/ of the Journal	Name of the Organization
2022	Reviewer	Trends in Sciences (Formerly Walailak Journal of Science and Technology)
2021	Reviewer	Current Catalysis
2021	Reviewer	Current Green Chemistry
2018	Annual Membership of ACS	American Chemical Society
2020	India's carbon capture & utilization network (CO <sub>2</sub> India)	CO <sub>2</sub> India Network Member
2019	Advisory and Life time member in National NGO Foundation for Health and Environment Research.	Life Foundation for Health and Environment Research.
2010	G.M. Abhyankar research presentation Award	Institute of Chemical Technology, Mumbai
2011	G.M. Abhyankar research presentation Award	Institute of Chemical Technology, Mumbai
2011	Senior Research Fellowship	Council of Scientific & Industrial Research (CSIR), India.
2009	Junior Research Fellowship	Council of Scientific & Industrial Research

**RESEARCH PRODUCTIVITY PROFILE**

		(CSIR), India.	
Research papers published	<b>16</b>	Citations for papers	<b>332</b>
Conference Proceedings	<b>03</b>	h-index	<b>8</b>
Book chapters	<b>04</b>	Participation in conferences	<b>16</b>
Papers presented in conferences	<b>12</b>	Invited talks	<b>02</b>
Fellowships/Awards/Accolades	<b>03</b>	Number of journals where work is published	<b>08</b>
Project completed ( <b>Minor</b> )	<b>01</b>		

**Ph.D. RESEARCH WORK**

**University:** Institute of Chemical Technology (Formerly UDCT), University of Mumbai, Mumbai.

**Research Supervisor:** Prof. R. V. Jayaram (UGC Professor, ICT, Mumbai, MH, India).

**Dissertation Title:** “Surface modified metal oxides and mixed metal oxides as potential Solid acid catalysts”

**Doctoral Research:**

- Sulphated-mixed metal oxides catalyzed amidation of *tert*-butyl acetate.
- Synthesis of 5,6-unsubstituted 1,4-dihydropyridines using sulphated mixed metal oxides.
- Regioselective iodination of arenes using I<sub>2</sub> with PEG-200 as solvent.
- Regioselective ring opening of epoxides by alcohols and amines.
- Synthesis of 1,8 dioxo-octahydroxanthenes and 1,8 dioxo-decahydroacridines using sulphated metal oxides.
- Synthesis of dibenzyl ethers from corresponding alcohols under solvent free conditions.
- Preparation of various **surface modified catalysts** including sulphated zirconia and its mixed metal oxides and tests their utility as a catalyst for various organic transformations.
- **Kinetic study** and mechanistic investigation of the reactions.
- Use of non-conventional techniques like **ultrasound** and **microwave**.

**MINOR RESEARCH PROJECT:**

**Title of the Project:** Catalytic activity studies of bifunctional catalysts for the synthesis of xanthenes (University of Mumbai)

**RESEARCH PUBLICATIONS:**

- [1] Synthesis of Au-Pd@CeO<sub>2</sub> Nanocomposite as a Potential catalyst for the Buchwald-Hartwig Cross Coupling and Amination of Benzyl Alcohol Reactions, *Journal of Chemical Sciences* (**Accepted on 17<sup>th</sup> February 2024**).
- [2] Revisiting the role of sulfated oxides for the synthesis of pharmaceutically important heterocycles: Understanding, challenges, and future prospects, **Sandeep S. Kahandal**, Anand S. Burange, Thomson A. Fernandes, *Tetrahedron Green Chem* 2 (2023) 100031  
<https://doi.org/10.1016/j.tgchem.2023.100031>
- [3] One Pot Synthesis of CuO-CuFe<sub>2</sub>O<sub>4</sub>@rGO Nanostructure with Synergistic Effect for Efficient Electrochemical Sensing Application of Paracetamol, Jagdish C. Bhangoji, **Sandeep S. Kahandal**, Rahul S. Patil, Trimurti L. Lambat, Shirinaz I. Khan, Gurumeet Wadhava, Sami H. Mahmood, and Suresh S. Shendage, *ECS Advances*, 2023 2 026503,  
**DOI** 10.1149/2754-2734/acd800

- [4] Highly efficient magnetically separable Zn-Ag@L-arginine Fe<sub>3</sub>O<sub>4</sub> catalyst for synthesis of 2-aryl-substituted benzimidazoles and multicomponent synthesis of pyrimidines, Padmakar A. Kulkarni, **Sandeep S. Kahandal**, Nitin A. Mirgane, Ashis Kumar Satpati, *Results in Chemistry*,  
<https://doi.org/10.1016/j.rechem.2022.100655>,  
<https://www.sciencedirect.com/science/article/pii/S2211715622003745>.
- [5] Comparative evaluation of drying methods on Vitamin C and protein content of moringa oleifera Leaves. **Sandeep S. Kahandal**, Pratibha S. Kadam, Ayesha Khan, Dhanashree Ahire, Urma Shaikh, Shikha Singh, Preeti Mishra, Priyanka Varma and Moitreyee Saha, *JBNB: A Multidisciplinary Journal*, 2020, 50-56.
- [6] An efficient route to 1,8-dioxo-octahydroxanthenes and -decahydroacridines using a sulfated zirconia catalyst. **Sandeep Kahandal**, Anand S. Burange, Sandip R. Kale, Radha V. Jayaram, *Catalysis Communications*, Volume 97, 5, 2017, Pages 138-145,  
<https://doi.org/10.1016/j.catcom.2017.03.017>,  
<https://www.sciencedirect.com/science/article/abs/pii/S1566736717301036>.
- [7] A Sustainable and Efficient Synthesis of Benzyl Phosphonates using PEG/KI Catalytic System. Shamrao Disale, Sandip Kale, **Sandeep Kahandal**, G. K Abraham, Manoj B. Gawande, *Frontiers in Chemistry*, 4, 35, 2016, 1-6.  
<https://doi.org/10.3389/fchem.2016.00035>,  
<https://www.frontiersin.org/articles/10.3389/fchem.2016.00035/full>.
- [8] A mild route for one pot synthesis of 5,6-unsubstituted 1,4-dihydropyridines catalyzed by sulphated mixed metal oxides, **Sandeep S. Kahandal**, Sandip R. Kale, Manoj B. Gawande, Radha V. Jayaram, *Catalysis Science & Technology*, 4(3): 2014, 672-680.  
<https://doi.org/10.1039/C3CY00651D>,  
<https://pubs.rsc.org/en/content/articlelanding/2014/cy/c3cy00651d>.
- [9] Greener iodination of arenes using sulphated ceria-zirconia catalysts in polyethylene glycol, **Sandeep Kahandal**, Sandip R. Kale, Dr. Manoj B. Gawande, Radha V. Jayaram. *RSC Adv.*, 2014, 4, 6267-6274.  
<https://doi.org/10.1039/C3RA46537C>,  
<https://pubs.rsc.org/en/content/articlelanding/2014/ra/c3ra46537c>.  
**Highlighted in ChemInform, 2014, 41- 042, O 0235.**
- [10] A Benign synthesis of 2-amino-4H-chromene in aqueous medium using hydrotalcite (HT) as a heterogeneous base catalyst. Sandip R. Kale, **Sandeep Kahandal**, Anand S. Burange, Radha V. Jayaram, *Catal. Sci. Technol.*, 2013, 3, 2050-2056.  
<https://doi.org/10.1039/C3CY20856G>,  
<https://pubs.rsc.org/en/content/articlelanding/2013/cy/c3cy20856g>.
- [11] Magnetically recyclable  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>-HAP nanoparticles for the cycloaddition reaction of alkynes, halides and azides in aqueous media, Sandip R. Kale, **Sandeep Kahandal**, Manoj B. Gawande, Radha V. Jayaram, *RSC Advances*, 3 (22), 2013, 8184-8192.  
<https://doi.org/10.1039/C3RA00038A>  
<https://pubs.rsc.org/en/content/articlelanding/2013/ra/c3ra00038a>.
- [12] Sequential synthesis of  $\beta$ -amino alcohols using a CeO<sub>2</sub>-ZrO<sub>2</sub> bifunctional catalyst system, Kalpesh D. Parghi, Sandip R. Kale, **Sandeep S. Kahandal**, Manoj B. Gawande and Radha V. Jayaram, *Catal. Sci. Technol.*, 2013, 3, 1308-1313,  
<https://doi.org/10.1039/C3CY20806K>,  
<https://pubs.rsc.org/en/content/articlelanding/2013/cy/c3cy20806k>.
- [13] Sulphated yttria-zirconia as a regioselective catalyst system for the alcoholysis of epoxides, **Sandeep S. Kahandal**, Sandip R. Kale, Shamrao T. Disale, Radha V. Jayaram, *Catal. Sci. Technol.*, 2012, 2, 1493-1499,  
<https://doi.org/10.1039/C2CY20116J>.  
<https://pubs.rsc.org/en/content/articlelanding/2012/cy/c2cy20116j>.
- [14] SO<sub>4</sub><sup>2-</sup>/Ce<sub>x</sub>Zr<sub>1-x</sub>O<sub>2</sub> -Catalyzed Synthesis of N-tert-Butylamides from Various Nitriles under Solvent-Free Conditions, **Sandeep S. Kahandal**, Sandip R. Kale, Shamrao T. Disale and Radha V. Jayaram, *Chemistry Letters*, 41, 2012, 738-740.  
<https://doi.org/10.1246/cl.2012.738>,

<https://www.journal.csj.jp/doi/abs/10.1246/cl.2012.738>.

**Highlighted in Synfacts 8, 10, 2012, 1161.**

**Highlighted in ChemInform 49 (43), 2012, 325, DOI: 10.1002/chin.201249043**

- [15] Conventional and microwave-assisted multicomponent reaction of alkyne, halide and sodium azide catalyzed by copper apatite as heterogeneous base and catalyst in water, Sandip Kale, **Sandeep Kahandal**, Shamrao Disale and Radha Jayaram, *Current Chemistry Letters*, 1 2012, 69–80.  
doi: 10.5267/j.ccl.2012.3.002.  
<http://growing-science.com/beta/ccl/801-conventional-and-microwave-assisted-multicomponent-reaction-of-alkyne-halide-and-sodium-azide-catalyzed-by-copper-apatite-as-heterogeneous-base-and-catalyst-in-water.html>.
- [16] Choline chloride·2ZnCl<sub>2</sub> ionic liquid: An efficient and reusable catalyst for the solvent free Kabachnik-Fields reaction, Shamrao T. Disale, S. R. Kale, **Sandeep Kahandal**, Radha V. Jayaram, *Tetrahedron Letters*, 53, 53, 2012, 2277-2279.  
<https://doi.org/10.1016/j.tetlet.2012.02.054>.  
<https://www.sciencedirect.com/science/article/abs/pii/S0040403912002900>.  
**Highlighted in ChemInform 34- 165, 2012, S 0080.**

#### BOOK CHAPTER:

- [1] Graphene and Related Nanomaterials for Water Remediation, **Sandeep Kahandal**, Modern Research and Environmental Sustainability Volume – 2, Pg No. 127-142, AkiNik Publications New Delhi, ISBN: 978-93-5570-593-8.
- [2] Current advancements in COVID-19 and related human coronavirus disease therapeutic agents and vaccines, **Sandeep Kahandal**, Innovative Research Trends in Science and Humanities, Pg. No. 45-54, INSC Publishing House (IPH),  
**ISBN:978-1-954461-44-4.**
- [3] Nano Sulfated Metal Oxides Catalyzed Multicomponent Reactions, **Sandeep Kahandal**, Advances in Nanomaterials Synthesis and Their Applications (Volume–1), Pg. No., 89-103, Integrated Publications, New Delhi,  
**ISBN: 978-93-90471-22-5.**  
**Book DOI:** <https://doi.org/10.22271/int.book.70>.
- [4] ICT: A Promising Platform for the Indian Higher Education, **Sandeep S. Kahandal**, Current Trends in ICT and Education, 01-08, **ISBN: 978-93-5570-187-9,**  
**Book DOI:** <https://doi.org/10.22271/ed.book.1826>.

#### CONFERENCE PROCEEDINGS:

- [1] Determination of iron, calcium, potassium, and sodium from organic and non-organic jaggery, Seema Pal, **Sandeep S. Kahandal\***, April 9, 10<sup>th</sup> 2021, Proceedings of the National Conference on Advances in Chemical Sciences and Sustainable development, **ISBN:9788192362885.**
- [2] Calcium estimation of fenugreek Leaves and seeds by various estimation methods, A. A. Samani, S. Ansari, S. Mapkar, S. Singh, V. Misale, P. J. Maliekal, Priyanka Varma, Moitreyee Saha, **Sandeep S. Kahandal\***, International conference on Emerging technologies for sustainable agriculture, proceedings, Jan. 2017, 113-117, **ISBN: 978-81-923628-4-7.**
- [3] Preliminary phytochemical screening of fenugreek leaves (air, oven and microwave dried) and dries seeds, S. Nair, K. Patil, K. Bhoir, K. Gupta, R. Singh, **Sandeep S. Kahandal**, P. J. Maliekal, P. Varma, M. Saha\* International conference on Emerging technologies for sustainable agriculture, proceedings, Jan. 2017, 103-108, **ISBN: 978-81-923628-4-7.**

## INVITED TALK/ PAPER PRESENTATIONS/ INTERNATIONAL / NATIONAL CONFERENCES

- [1] Sulphated Yttria-Zirconia as Highly Regioselective Catalyst for Ring Opening of Epoxides, **Sandeep S. Kahandal**, Oral Presentation, Three Days International Conference on "Recent Trends in Green and Sustainable Development in Chemical Sciences" organized by Department of Chemistry, KTHM College, Nashik under UGC-STRIDE: Research Capacity Building on 25th to 27th October, 2021.
- [2] Sulphated Ceria-yttria catalysed synthesis of ethers, **Sandeep S. Kahandal**, Oral Presentation, National Conference on "Applications of Nanomaterials in Chemical and Physical Sciences (ANCPs- 2019), 1<sup>st</sup> and 2<sup>nd</sup> Feb. 2019, Organized by Dept. of Chemistry, A. A. Arts, B.G Science, Manchar, Pune, MH, India.
- [3] Sulphated Yttria-Zirconia as a Catalyst system for the synthesis of 1,3 Dioxolanes – A [3+ 2] cycloaddition approach, **Sandeep S. Kahandal**, Poster presentation, National conference on "Materials and their application: A broad perspective" 9-10 January 2020, Organized by Dept. of Physics, VPM's B. N. Bandodkar College of Science (Autonomous), Thane.
- [4] Determination of Iron, Calcium, Potassium, and Sodium from organic and non-organic jaggery, **Sandeep S. Kahandal**, Poster presentation, National conference on National Conference on Advances in Chemical Sciences and Sustainable development, Department of Chemistry VPM's B. N. Bandodkar College of Science (Autonomous) In Collaboration with Department of Chemistry Dr. Homi Bhabha State University, The Institute of Science, Mumbai MH, April 9 & 10, 2021.
- [5] An efficient route to 1,8-dioxo-octahydroxanthenes and –decahydroacridines using a sulfated zirconia catalyst, **Sandeep S. Kahandal**, Oral Presentation, International Web Conference on Science, Engineering & Technology (IWCSET-2020) held during May 15-16, 2020. [Society for technologically Advanced materials for India (STAMI)].
- [6] Greener iodination of arenes using sulfated ceria–zirconia catalysts in polyethylene glycol, **Sandeep S. Kahandal**, Poster presentation at National Conference on Advances in Chemical Sciences and Sustainable development, (ACSSD-2021) Organized by Department of Chemistry, VPM's B. N. Bandodkar College of Science (Autonomous) in collaboration with Department of Chemistry Dr. Homi Bhabha State University, The Institute of Science, Mumbai Maharashtra on April 9 & 10, 2021.
- [7] Participated in **ACS Industry Symposium** on "Global Challenges and Recent Advances in Biologics and Biosimilars" on 14-15<sup>th</sup> December 2017, Mumbai,
- [8] Poster presentation at Indo-Japan Conference on Catalysis: A Green Chemistry Approach, **Sandeep S. Kahandal** and Radha V. Jayaram, Organized by Dept. of Chemistry, Institute of Chemical Technology, Mumbai under UGC-SAP (DRS-1), 13<sup>th</sup> February 2013.
- [9]  $\text{SO}_4^{2-}/\text{Ce}_x\text{Zr}_{1-x}\text{O}_2$  catalyzed efficient synthesis of N-tert-butyl amides from tert-butyl acetate under solvent-free conditions, **Sandeep S. Kahandal** and Radha V. Jayaram, "20th National Symposium on Catalysis" in IIT Madras, Chennai (Tamil-Nadu) on 19- 22<sup>th</sup> December 2010.
- [10] Sulphated Yttria-Zirconia as highly regioselectivity catalysts for alcoholysis of Epoxides, **Sandeep S. Kahandal** and Radha V. Jayaram\* International conference on Global Challenge's- The role of Chemistry in giving their solutions (June 12 -14, 2011, **Indian Council of Chemists, Bangkok, Thailand**.
- [11] Sulphated ceria-zirconia catalyzed efficient synthesis of N-tert-butyl amides from tertbutyl acetate under solvent-free conditions, **Sandeep S. Kahandal** and Radha V. Jayaram\* Oral Presentation at "CATSCHOL - 2011" Organized by Department of Chemistry, ICT, Mumbai in collaboration with Catalysis Society of India (Mumbai Chapter) on 5th March 2011.

- [12] Surface modified metal oxides in various organic transformations, **Sandeep S. Kahandal** and Radha V. Jayaram, Oral Presentation at “Research Scholar Meet (RSM)-2012” Organized by Department of Chemistry, SIES College, Mumbai in collaboration with Catalysis Society of India (Mumbai Chapter) on January 2012.
- [13] Poster presented at two days Seminar on Challenges and Opportunities for education and research for development of sustainable chemical and allied Industries held at Institute of Chemical Technology, Mumbai, 11-12<sup>th</sup> May 2011.
- [14] Delivered lecture for NET Guidance Courses in Chemistry, N.G. Acharya and D.K. Marathe College of Science and Commerce, Chembur, Mumbai. 20<sup>th</sup> March 2016.
- [15] Delivered 9 Lectures in Kolhapur District, at Different Schools in Marathi Language during 2008-09 on encouraging students to pursue Science Research as their Career, Organized by ICT, Mumbai University and Marathi Vindhyashram Parishad.

#### **PARTICIPATION AND CONFERENCES ORGANIZED:**

- [1] National Conference on Advances in Chemical Sciences and Sustainable development, (ACSSD-2021), **Sandeep S. Kahandal**, Organizing Secretary, Organized by Department of Chemistry, VPM's B. N. Bandodkar College of Science (Autonomous) in collaboration with Department of Chemistry Dr. Homi Bhabha State University, The Institute of Science, Mumbai Maharashtra, April 9 & 10, 2021.
- [2] Participated in International conference on Emerging Technologies for sustainable agriculture. Organized by Dept. of Biotech. and Micro. B.N. Bandodkar College of Science, in collaboration with Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli 6<sup>th</sup>-7<sup>th</sup> Jan. 2017.
- [3] Participated in Workshop on Credit based semester and Grading system with effect from the acad. Year 2015-16 for S.Y.B.Sc. organized by Dept. of Chemistry, Karmaveer Bhaurao Patil College and Board of Studies, University of Mumbai, 24<sup>th</sup> April 2015.
- [4] Participated in Workshop on Credit based semester and Grading system with effect from the acad. Year 2016-17 for T.Y.B.Sc. organized by Dept. of Chemistry, R.J. College of Arts. Science and Commerce and Board of Studies, University of Mumbai, 4<sup>th</sup> March 2017.
- [5] Participated in International conference on Ecosystem services of wetlands: Ardrabhumi 2016, Organized by Dept. of Zoology and Env. Sciences, B.N. Bandodkar College of Science, in collaboration with Mangrove Cell Mumbai, Salim Ali Centre for ornithology and Natural History, Coimbatore, Mangrove society of India, Goa, Hope Nature Trust, Thane on 16<sup>th</sup>-17<sup>th</sup> Feb. 2016.
- [6] Participated in Workshop on Choice based Credit based semester with effect from the acad. Year 2016-17 for F.Y.B.Sc. Organized by Dept. of Chemistry, J.V.M.'s Mehta Degree College of Arts, Science and Commerce and Board of Studies, University of Mumbai, 29<sup>th</sup> July 2017.
- [7] Participated in UGC sponsored National conference on Environmental issues and benefits with special reference to polymer industries, Organized by Dept. of Chemistry, Dnyanasadhana College, Thane on 24<sup>th</sup> January, 2015.
- [8] Participated in one day workshop on Radiochemistry and applications of Radioisotopes, Organized by Dept. of Chemistry, Maharshi Dayanand College of Arts Science and Commerce in Collaboration with Indian association of nuclear Chemists and allied scientists, Mumbai, on 20<sup>th</sup> August, 2016.
- [9] Volunteer for the Workshop ChemFlavour-09 for High school students, Organized by Dept. of Chemistry, ICT, Mumbai under TEQIP, 22<sup>nd</sup> -24<sup>th</sup> Jan -2009.
- [10] Volunteer for two-day workshop on Laboratory Safety for technical and Engineering College Personnel, Organized by Dept. of Chemistry, Institute of Chemical Technology, Mumbai under TEQIP on Feb 20-21, 2009.

- [11] Completed orientation programme (under RUSA) at UGC, Human resource development centre, University of Mumbai. (4th Nov -1st Dec).
- [12] Organized two days workshop on Basic principles: Preparation and Standardization of solutions, 7th Feb – 8th Feb 2017, at Dept. of Chem. B. N, Bandodkar College of Science, Thane.
- [13] Participated in physics Carnival 2k17 held from 20<sup>th</sup> Jan- 21<sup>st</sup> Jan 2017, organized by dept. of Physics, B. N, Bandodkar College of Science, Thane.
- [14] Participated in state level workshop on analytical instrument techniques, Dec. 11-12<sup>th</sup>, 2006, at Dept. of Chem. K.T.H.M College and University of Pune.
- [15] Completed one day training in Science Journalism organized by National Centre for Science Communicators, Mumbai and ICT, Mumbai, 21<sup>st</sup> Jan. 2012.
- [16] Participated in workshop on Exploring new horizons of teaching- Learning Methodologies, organized by V.P. M's B. N, Bandodkar College of Science, Thane. (16th July 2015).