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ACHIEVEMENTS:

- Cleared National Level test, **GATE**, 2016
- Recipient of **CSIR-Direct SRF** fellowship

Publications:

Published Papers

1. **Sandeep Kumar**, Shelja Sharma, Senthil M Arumugan, Chirag Miglani, S. Elumalai, Biphasic Separation Approach in the DES Biomass Fractionation Facilitates Lignin Recovery for Subsequent Valorization to Phenolics, ACS Sustainable Chemistry & Engineering, 2020, 8, 51. **Impact Factor: 9.224.**
2. **Sandeep Kumar**, Shelja Sharma, S. Sood, A. Umar, S.K. Kansal, Bismuth Sulphide (Bi_2S_3) nanotubes decorated TiO_2 nanoparticles heterojunction assembly for enhanced solar light driven photocatalytic activity. Ceramics International 42 (2016) 17551-17557. **Impact Factor: 5.532.**
3. **Sandeep Kumar**, Shelja Sharma, A. Umar, S.K. Kansal, Bismuth Sulphide (Bi_2S_3) Nanotubes as an Efficient Photocatalyst for Methylene Blue Dye Degradation. Nanoscience and Nanotechnology Letters 8 (2016) 266-272. **Impact Factor: 1.128.**
4. **Sandeep Kumar**, Shelja Sharma, S.K. Kansal, S. Elumalai, Efficient Conversion of Glucose into Fructose via Extraction-Assisted Isomerization Catalyzed by Endogenous Polyamine Spermine in the Aqueous Phase, ACS Omega 5, (2020) 2406-2418. **Impact Factor: 4.132.**
5. Shelja Sharma, **Sandeep Kumar**, Senthil Murugan Arumugam, Sasikumar Elumalai, Promising Photocatalytic degradation of lignin over carbon quantum dots decorated TiO_2 in aqueous condition, Applied Catalysis A: General, 602 (2020) 117730. **Impact Factor: 5.723.**
6. **Sandeep Kumar**, D. Nepak, S.K. Kansal, S. Elumalai, Expeditionary isomerization of glucose to fructose in aqueous media over sodium titanate nanotubes, RSC Advances, 8 (2018) 30106-30114. **Impact Factor: 4.036.**
7. S. Sood, **Sandeep Kumar**, A. Umar, A. Kaur, S. K. Mehta, S. K. Kansal, TiO_2 quantum dots for the photocatalytic degradation of indigo carmine dye, Journal of Alloys and Compounds, 650 (2015) 193-198. **Impact Factor: 6.371.**

8. V. Ahluwalia, S. Elumalai, V. Kumar, **Sandeep Kumar**, R. S. Sangwan, Nano silver particle synthesis using Swertia paniculata herbal extract and its antimicrobial activity, Microbial Pathogenesis, 114 (2018) 402-408. **Impact Factor: 3.848.**
9. **Sandeep Kumar**, V. Ahluwalia, P. Kundu, R.S. Sangwan, S.K. Kansal, T. M. Runge, S. Elumalai, Improved levulinic acid production from agri-residue biomass in biphasic solvent system through synergistic catalytic effect of acid and products, Bioresource Technology, 251 (2018) 143-150. **Impact Factor: 11.889.**
10. P. Kundu, **Sandeep Kumar**, V. Ahluwalia, S.K. Kansal, S. Elumalai, Extraction of arabinoxylan from corncob through modified alkaline method to improve xylooligosaccharides synthesis, Bioresource Technology Reports, 3 (2018) 51-58.
11. Sangeeta Mahala, Senthil M. Arumugam, **Sandeep Kumar**, Dalwinder Singh, Shelja Sharma, Bhawana Devi, Sudesh K. Yadav, Sasikumar Elumalai, Sn Doping on Ta₂O₅ Facilitates Glucose Isomerization for Enriched 5-Hydroxymethylfurfural Production and its True Response Prediction using a Neural Network Model, ChemCatChem, 13 (2021) 4787-4798. **Impact Factor: 5.497.**
12. Senthil M. Arumugam, Dalwinder Singh, Sangeeta Mahala, Bhawana Devi, **Sandeep Kumar**, Sunaina Jakhu, Sasikumar Elumalai, MgO/CaO Nanocomposite Facilitates Economical Production of d-Fructose and d-Allulose Using Glucose and Its Response Prediction Using a DNN Model, Ind. Eng. Chem. Res. 2022, 61, 6, 2524–2537. **Impact Factor: 4.326.**
13. Shelja Sharma, Sandeep Kumar, Senthil Murugan Arumugam, Muthukumaran Palanisami, Vijayakumar Shanmugam, Sasikumar Elumalai, Nb₂O₅/g-C₃N₄ Heterojunction Facilitates 2,5-Diformylfuran Production via Photocatalytic Oxidation of 5-Hydroxymethylfurfural under Direct Sunlight Irradiation, ChemPhotoChem, 6(2), e202100199. **Impact Factor: 3.679.**

Book Chapter:

1. S. Elumalai, B. Arumugam, P. Kundu, **Sandeep Kumar**, Phenol derivatives of lignin monomers for aromatic compounds and cycloalkane fuels, Biomass, Biofuels, Biochemicals Recent Advances in Development of Platform Chemicals, 2020, 459-483.
2. Shelja Sharma, Sandeep Kumar, and Sasikumar Elumalai, Photocatalysis of biomass lignin to simple aromatic molecules, Biomass, Biofuels, Biochemicals 2022 535-561.
3. Shelja Sharma, Senthil Murugan Arumugam, Sandeep Kumar, Sangeeta Mahala, Bhawana Devi, Sasikumar Elumalai, Updated technologies for sugar fermentation to bioethanol, Biomass, Biofuels, Biochemicals 2022, 95-116.
4. Senthil Murugan Arumugam, Shelja Sharma, Sandeep Kumar, Sangeeta Mahala, Bhawana Devi, Sasikumar Elumalai, Biomass, Biofuels, Biochemicals, 2022, 1-30.

Patents:

1. Improved levulinic acid production from agri-residue biomass in biphasic solvent system through synergistic catalytic effect of acid and products (Granted - 331213)
2. Process for enriched xylooligosaccharides production from secondary agri-residues through alkaline treatment (Patent application No. 201711007495)
3. Method for isolation of lignin from lignocellulosic biomass in acidic deep eutectic solvent through organic solvent extraction. (Patent Appl. No. 201811019330)

Conferences:

- Best Poster presentation in Bioprocessing India 2016 on “Improved levulinic acid production from agri-residue biomass in biphasic solvent” jointly organized by INST (Mohali), CIAB (Mohali) and CSIR (India), 15-17th December 2016.
- Best poster presentation in Sustainable Energy and Environmental Challenges 2017 on “Green Solvent Based Method for Isolation and Further Processing of Rice Straw Lignin to Aromatic Phenolics” organized by International Society for Energy, Environment and Sustainability, India.
- Best Oral presentation in Chascon-2019 on the theme of “Science and Technology for New India” on “High purity lignin extraction from lignocellulosic biomass using Deep Eutectic Solvents” organized by CRIKC, Chandigarh, March 13-15, 2019.
- Research award from Dr. SSBUI CET, Panjab university in academic year of 2016-2017