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Publications and Patents

Journal Cover Articles

1. Padhi, S. K.*, et al. **Inside Front Cover**: *Dalton Trans.*, **2026**, 55, 13008.
2. Padhi, S. K.*, et al. **Back Cover**: *Dalton Trans.*, **2026**, 55, 7415–7416.
3. Padhi, S. K.*, et al. **Inside Back Cover**: *Chem. Commun.*, **2026**, 62, 5991–5991.
4. Padhi, S. K.*, et al. **Back Cover**: *Dalton Transactions*, **2025**, 54, 16993–16994.
5. Padhi, S. K.*, et al. **Inside Back Cover**: *Catalysis Science & Technology*, **2025**, 15, 7251.
6. Padhi, S. K.*, et al. **Inside Back Cover**: *Dalton Transactions*, **2025**, 54, 14227.
7. Mishra, A.; Makhal, K.; Raj, D.; Pasupalak, S.; Mallik, B. S.*; Nordlander, E.*; Padhi, S. K.* **Front Cover**: *Hydrogenation of CO_2 to Methanol by a Nickel Pincer Catalyst and Mechanistic Investigations by DFT Studies*, *European Journal of Inorganic Chemistry*, **2025**, 28(21), e70000.
8. Akhter, S. Sk.; Srivastava, D.; Mishra, A.; Patra, N.; Kumar, P.; Padhi, S. K.* **Cover Feature**: *Physicochemical Analysis of Cu(II)-Driven Electrochemical CO_2 Reduction and its Competition with Proton Reduction*, *Chemistry – A European Journal*, **2024**, 30, e202487004.

Publications

1. Raj, D.; Makhal, K.; Mishra, A.; Natarajan, M. T.; Jaiswal, P. K.; Mallik, B. S.; Nordlander, E.; Padhi, S. K.* *Redox Non-Innocent Ligand-Controlled Selective CO_2 Reduction to HCOOH by a Co(II) Catalyst*, **Dalton Trans.**, **2026**, *55*, 13044–13056. **(Inside Front Cover)**

2. Natarajan, M. T.; Padhi, S. K.* *Hydride-Mediated Ammonia Borane Dehydrogenation in Water by Arene-Ru(II) Catalysts Revealed through Real-Time Gas Evolution*, **Chem. Commun.**, **2026**, *62*, 5880–5884. **(Inside Back Cover)**

3. Natarajan, M. T.; Teja, D.; Akhter, S. Sk.; Bhardwaj, P.; Kumar, P.; Mallik, B. S.; Padhi, S. K.* *Electrocatalytic Ammonia Oxidation Mediated by a Cu(II) Complex: A*

Hydrazine Pathway to Hydrogen Generation, **Dalton Trans.**, **2026**, *55*, 7111–7126. **(Back Cover)**

4. Pradhan, A.; Natarajan, M. T.; Rana, R.; Pradhan, T. K.; Padhi, S. K.; Samal, S. L.* *Iodine Incorporated Direct Band Gap Materials for Enhanced Electrochemical Hydrogen Evolution: Role of Structural Distortion and Weak Metal Halide Bond*, **Dalton Trans.**, **2026**, *55*(32), 11799–11813. **(Front Cover)**

5. Chinnasamy, P.; Tamilarasan, S.; Sahoo, M.; Padhi, S. K.; Thangavelu, S.* *Hierarchical Polymorphic Nickel-Tin Sulfides/MWCNT for Permselective Electroreduction of CO_2 to Formate: RRDE-Assisted Product Validation*, **ACS Appl. Energy Mater.**, **2026**, *9*(13), 8525–8538.

6. Akhter, S. Sk.; Makhal, K.; Raj, D.; Raj, M.; Natarajan, M. T.; Mallik, B. S.; Bhardwaj, P.; Kumar, P.; Nordlander, E.; Padhi, S. K.* *Selective Electrochemical CO_2 Reduction to CO by a Co(II) Dimer Catalyst by Metal-Ligand Cooperativity*, **Dalton Trans.**, **2025**, *54*, 16682–16696.

7. Akhter, S. Sk.; Makhal, K.; Raj, D.; Natarajan, M. T.; Jaiswal, P. K.; Biswas, A.; Mallik, B. S.; Kumar, P.; Padhi, S. K.* *Manoeuvring Organo-electrocatalytic Selective CO_2 Reduction to CO by Terpyridine Derivatives*, **Catal. Sci. Technol.**, **2025**, *15*, 7043–7058.

8. Raj, D.; Makhal, K.; Raj, M.; Mishra, A.; Mahapatra, R.; Pattnaik, T.; Mallik, B. S.; Padhi, S. K.* *Electrochemical Water Oxidation using Single-Site Cu(II) Molecular Complexes: A Mechanism Elucidated by Computational Studies*, **Dalton Trans.**, **2025**, *54*, 13894–13908. **HOT ARTICLE**

9. Mishra, A.; Makhal, K.; Raj, D.; Pasupalak, S.; Mallik, B. S.*; Nordlander, E.*; Padhi, S. K.* *Hydrogenation of CO_2 to Methanol by a Nickel Pincer Catalyst and Mechanistic Investigations by DFT Studies*, **Eur. J. Inorg. Chem.**, **2025**, *28(21)*, e202500138.

10. Raj, M.; Padhi, S. K.* *Decoding the Catalytic Potential of Dinuclear 1st-Row Transition Metal Complexes for Proton Reduction and Water Oxidation*, *Chem. Rec.*, **2025**, *25*, e202400170. (Invited Article)

11. Mishra, A.; Padhi, S. K.* *Harnessing Ruthenium and Copper Catalysts for Formate Dehydrogenase Reactions*, *Chem. Rec.*, **2024**, *24*, e202400172. (Invited Article)

12. Akhter, S. Sk.; Srivastava, D.; Mishra, A.; Patra, N.; Kumar, P.; Padhi, S. K.* *Physicochemical Analysis of Cu(II)-Driven Electrochemical CO_2 Reduction and its Competition with Proton Reduction*, *Chem. Eur. J.*, **2024**, *30*, e202403321.

13. Mishra, A.; Srivastav, D.; Raj, D.; Patra, N.; Padhi, S. K.* *Formate Dehydrogenase Activity by a Cu(II)-based Molecular Catalyst and Deciphering the Mechanism by DFT studies*, *Dalton Trans.*, **2024**, *53*, 1209–1220.

14. Maity, N.; Mishra, A.; Mishra, A.; Barman, S.; Padhi, S. K.; Panda, B. B.; Jaseer, E. A.; Javid, M. *Tuning Pd to Ag Ratio to Enhance Synergistic Activity of Fly Ash Supported Pd_xAg_y Bimetallic Nanoparticles*, *ACS Omega*, **2024**, *9*, 1020–1028.

15. Raj, M.; Makhal, K.; Raj, D.; Mishra, A.; Mallik, B. S.; Padhi, S. K.* *Electrocatalytic Hydrogen Evolution by a Dinuclear Copper Complex and Mechanistic Elucidation through DFT Studies*, *Dalton Trans.*, **2023**, *52*, 17797–17809.

16. Raj, M.; Makhal, K.; Mishra, A.; Mallik, B. S.; Padhi, S. K.* *Ligand-mediated Hydrogen Evolution by Co(II) Complexes and Assessment of the Mechanism by Computational Studies*, *Inorg. Chem.*, **2023**, *62*, 10993–11008.

17. Vatsa, A.; Mishra, A.; Padhi, S. K.* *Monitoring of Catalytic Dehydrogenation of Formic Acid by a Ruthenium(II) Complex through Manometry*, *Inorg. Chem. Commun.*, **2022**, *144*, 109898.

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Patents

1. Roy, T.; Natarajan, M. T.; Jana, S.; Das, P.; and Padhi, S. K.* *A Fluoro-Bridged Mixed Valence Dinuclear Copper Complex: Synthesis, Characterization, and Use in the Oxidation Reactions.* Indian Patent Application No. 202531111630, Filed: 14 Nov 2025. **(Status: GRANTED)**

2. Mishra, A.; and Padhi, S. K.* *A process for the preparation of methanol by the hydrogenation of bicarbonate and carbon dioxide (CO_2) captured from air.* Indian Patent Application No. 202431048509, Filed on 25th June 2024. (**Status: GRANTED**)

3. Natarajan, T.; and Padhi, S. K.* *A catalyst for green hydrogen generation, a process for the preparation thereof and the use thereof for green hydrogen generation from ammonia.* Indian Patent Application No. 202431070872, Filed on 19th Sept. 2024. (**Status: GRANTED**)

4. Tanaka, K.; Padhi, S. K. *Ruthenium complexes, and their use for preparation of reduced compounds of organic compounds. Jpn. Kokai Tokkyo Koho* (2011), JP 2011246412 A, 08 Dec 2011. (**Status: GRANTED**)

5. Mishra, A.; and Padhi, S. K.* *A process for the hydrogenation of carbon dioxide (CO_2) to methanol.* Indian Patent Application No. 202431048508, Filed on 25th June 2024. (**Status: Published**)