



Dr. ATUL A. PAWAR

Postdoctoral Research Fellow in Energy Science and Technology,
Environmental Waste Recycle Institute, Myongji University

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EDUCATION

2020-Present:

- **Postdoctoral Research Fellow in Energy Science and Technology, Environmental Waste Recycle Institute, under the supervision of Prof. Kim Hern, Major in Chemistry (Inorganic chemistry)**

Myongji University, Natural Science Campus, 116 Myongji-ro; Cheoin-gu, Yongin-si, Gyeonggi-do, South Korea

2017-2020:

- **PhD Student in Energy Science and Technology, Environmental Waste Recycle Institute, under the supervision of Prof. Kim Hern, Major in Chemistry (Inorganic chemistry)**

Myongji University, Natural Science Campus, 116 Myongji-ro; Cheoin-gu, Yongin-si, Gyeonggi-do, South Korea

- **PhD degree August 2020; GPA: 4.0/4.5**
- **Doctoral Dissertation:** Investigation of Di-and Tri-cationic Ionic Liquids Based Catalysts Towards the Fixation of Carbon Dioxide
- **Research Funding:** National Research Foundation of Korea (NRF); Ministry of Science, ICT and Future Planning; Ministry of Education; Korea Institute of Energy Technology Evaluation and Planning (KETEP); Ministry of Trade, Industry and Energy (MOTIE)

2012-2016:

- **Bachelor of Science in Chemistry (Inorganic chemistry)**, Pune University, Pune-411007, India
- April 2014 (Graduate), First class with distinction: 1359/1900
- July 2016 (Master), CGPA: 5.020 (Outstanding)

WORKING EXPERIENCE

2020-Present:

- **Postdoctoral Research Fellow**, Myongji University Natural Science Campus, Department of Energy Science and Technology, Environmental Waste Recycle Institute, Myongji University, South Korea
- **Research Focus:** Advanced materials processing of ideal electrode materials for; Electrochemical reduction of CO₂ (CO₂RR); Advance CO₂ battery with generation of fuel; Electrochromic application; Stimuli responsive materials towards CO₂; Linear and cyclic carbonate synthesis from CO₂; Polymer waste aerogel; Hydrogen generation; Water splitting process; and Liquid organic hydrogen carriers (LOHCs)

2017-2020:

- **Graduate Student (Researcher)**, Myongji University Natural Science Campus, Department of Energy Science and Technology, Environmental Waste Recycle Institute, Myongji University, South Korea

2012-2016:

- **Student Assistant**, Pune University
- Cipla Pvt. Ltd Company; Process Quality Control (QC) Section
- Berzelius Chemical Industry; Batch Processing Section
- Master degree project in National Chemical Laboratory (NCL), Pune; Handling all laboratory equipments; Tools; Laptops projectors; and Computer system

PUBLICATIONS

- **Atul A. Pawar**, Ashif H. Tamboli, S.W. Gosavi, Chiaki Terashima, Akira Fujishima, Hern Kim*, Synthesis of cerium and nickel doped titanium nanofibers for hydrolysis of sodium borohydride, *Chemosphere* **202**, 669-676, (2018 March 22). SCI IF= 7.086, First-co-author. **(The * represent corresponding author)**
- **Atul A. Pawar**, Avinash A. Chaugule, Ashif H. Tamboli, Harshad A. Bandal, Wook-Jin Chung, Hern Kim*, Ionic liquid based Cu₂S@C catalyst for effective coupling of diaryl diselenide with aryl halides under ligand-free conditions, *Chemical Engineering Journal* **351**, 490-497, (2018 June 19). SCI IF = 13.273, First-co-author
- **Atul A. Pawar**, Hern Kim*, Reaction parameters dependence of the CO₂/epoxide coupling reaction catalyzed by tunable ionic liquids, optimization of comonomer-alternating enhancement pathway, *Journal of CO₂ Utilization* **33**, 500-512, (2019 August 14). SCI IF = 7.132, First author
- **Atul A. Pawar**, Avinash A. Chaugule, Hern Kim*, Greener synthesis of dimethyl carbonate from carbon dioxide and methanol using a tunable ionic liquid catalyst, *Open Chemistry Journal* **17**, 1252-1265, (2019 December 12). SCI IF = 1.554, First-author
- **Atul A. Pawar**, Donghoon Lee, Wook-Jin Chung, Hern Kim*, Understanding the synergy between MgO-CeO₂ as an effective promoter and ionic liquids for high dimethyl carbonate production from CO₂ and methanol, *Chemical Engineering Journal* **395**, 124970, (2020 April 10). SCI IF = 13.273, First-author
- **Atul A. Pawar**, Harshad A. Bandal, Hern Kim*, Spinel type Fe₃O₄ polyhedral supported on nickel-foam as an electrocatalyst for water oxidation reaction, *Journal of Alloys and Compounds* **863**, 158742, (2021 Jan 13). SCI IF = 5.316, First-author
- **Atul A. Pawar**, Ayoung Kim, Hern Kim*, Synthesis and performance evaluation of plastic waste aerogel as sustainable and reusable oil absorbent, *Environmental Pollution Journal* **288**, 117717, (2021 July 07). SCI IF = 8.071, First-author

CONFERENCES (INTERNATIONAL AND DOMESTIC)

- **Atul A. Pawar**, Avinash A. Chaugule, Hern Kim*, Catalytic investigation of ionic liquid-cerium iron oxide nanorods towards the synthesis of dimethyl carbonate, *International Environmental Engineering Conference (IEEC)*, Jeju Island, South Korea, November 15-17, 2017. Oral presentation
- **Atul A. Pawar**, Ashif H. Tamboli, Hern Kim*, Synthesis of cerium and nickel doped titanium nanofibers for hydrogen production from sodium borohydride, *International Environmental Engineering Conference (IEEC)*, Jeju Island, South Korea, November 15-17, 2017. Oral presentation
- **Atul A. Pawar**, Ashif H. Tamboli, Avinash A. Chaugule, Hern Kim*, Ionic liquid as a catalyst for utilization of CO₂ in the synthesis of dimethyl carbonate, *Nano Tech East Asia*, Dubai-UAE, December 4-6, 2017. Oral presentation
- **Atul A. Pawar**, Hern Kim*, Synthesis of highly efficient ionic liquid for dimethyl carbonate production from CO₂ and MeOH, *International Conference on Functional Materials (ICFM)*, Shanghai, China, September 15-17, 2018. Oral presentation
- **Atul A. Pawar**, Hern Kim*, Dicationic ILs/MgO-CeO₂ for dimethyl carbonate production from CO₂ and MeOH, *Korean Society of Industrial Engineering Chemistry (KSIEC)*, Jeju Island, South Korea, November 1-2, 2018. Poster presentation
- **Atul A. Pawar**, Hern Kim*, Ionic liquid as catalyst to convert carbon dioxide into dimethyl carbonate and carbon nanofiber, *International Science Congress of Materials and Polymers (ISCMP)*, Albania, November 9-12, 2018. Poster presentation
- **Atul A. Pawar**, Hern Kim*, Ionic liquid based catalyst for effective coupling of diaryl diselenide with aryl halides and dimethyl carbonate synthesis, *Seoul National University (CCS Colloquium)*, Seoul, South Korea, November 22, 2018. Poster presentation
- **Atul A. Pawar**, Hern Kim*, Tunable ionic liquid properties towards dimethyl carbonate synthesis from CO₂ and methanol: Circumventing thermodynamic

limitations, *Korean Society of Industrial Engineering Chemistry (KSIEC)*, Busan, South Korea, May 1-3, 2019. Poster presentation

- **Atul A. Pawar**, Hern Kim*, Polymer supported ILs/Li-Al oxide for dimethyl carbonate production from CO₂ and methanol, *Journal of Thermal Analysis and Calorimetry Conference (JTACC)*, Budapest, Hungary, June 18-21, 2019. Poster presentation
- **Atul A. Pawar**, Hern Kim*, Self-assembled monolayer of pyridine@Cu-MOF-8 nanoparticle, a new electrocatalyst for reduction of CO₂ to methanol, *Korean Society of Industrial Engineering Chemistry (KSIEC)*, Jeju Island, South Korea, October 31-1, 2019. Poster presentation
- **Atul A. Pawar**, Hern Kim*, Selective production of methanol by the electrochemical reduction of CO₂ on Cu@PANI electrodes in aqueous KHCO₃ solution, *Korean Society of Industrial Engineering Chemistry (KSIEC)*, Jeju Island, South Korea, October 31-1, 2019. Poster presentation
- **Atul A. Pawar**, Hern Kim*, Polyhedral iron oxide supported on nickel foam as efficient electrocatalyst for overall water splitting, *Korean Institute of Chemical Engineers (KICChE)*, Gyeongju, South Korea, April 22-24, 2020. Poster presentation
- **Atul A. Pawar**, Hern Kim*, Advance aerogel technology from environmental plastic waste for oil/water separation, *Korean Institute of Chemical Engineers (KICChE)*, Gyeongju, South Korea, Oct 14-16, 2020. Poster presentation
- **Atul A. Pawar**, Hern Kim*, Bio-inspired paper waste aerogel with improved oleophilicity and strength via engineer cross-linking for oil-water separation, *Korean Society of Industrial Engineering Chemistry (KSIEC)*, Busan, South Korea, May 13-14, 2021. Poster presentation
- **Atul A. Pawar**, Hern Kim*, Ionothermal synthesis of porous carbon from waste paper for electrochemical carbon dioxide reduction, *The Polymer Society of Korea*, New-Gyeongju, South Korea, Oct 21, 2021. Poster presentation

AWARD

- **Best Poster Award**, *Korean Society of Industrial and Engineering Chemistry (KSIEC)*, Busan, South Korea, May 1-3, 2019

RESEARCH AND TECHNICAL SKILLS

Research Skills:

- Advanced synthesis of metal oxides nanoparticles via; Hydrothermal treatment; Metal co-precipitation method; Electrodeposition; Annealing process; Single/dual nozzle electrospinning; Metal oxide derived metal organic frameworks (MOFs); Different anion modified ionic liquids (ILs) and Poly ionic liquids (PILs); use as ideal electrode materials for; Electrochemical reduction of CO₂ reaction (CO₂RR); Advance CO₂ battery with generation of fuel; Electrochromic application; Linear (dimethyl carbonate) and cyclic (propylene carbonate) carbonate synthesis from CO₂ using high pressure reactor; Stimuli responsive material towards CO₂ and electrochemical energy storage system and environmental application such as; Polymer waste aerogel; Hydrogen generation; Water splitting process; and Liquid organic hydrogen carriers (LOHCs)
- Excellent material's characterization analysis skills using tests FTIR; NMR; MASS spectroscopy; GC-MS, HPLC; CO₂-TPD; TGA-DSC; UV-Vis; Photoluminescence (PL); XRD; FE-SEM; HR-TEM; EDX; XPS; UTM; CFP; and BET
- Knowledge in electrochemical properties and measurements
- Proficient in software programs such as PANalytical's X'Pert High Score Plus; XPS; ACD-NMR; OriginPro 2019; ZIVE-MP-1; ChemDraw Professional; VESTA; and ImageJ

Technical Skills:

- Excellent chemical laboratory skills and experiences
- Proficient in Microsoft Office 97-2016 such as Microsoft Word; Publisher; Excel; and PowerPoint
- Remarkable researcher with good presentation skills; resourceful, innovative, initiative and confident
- Has good training in quality assurance and control

Personal Strengths:

- Excellent team player and team leader with pleasing personality
- Strong and independent worker
- Fast learner and work effectively under pressure
- Responsible
- Has an excellent communication skills in both English and Korean language
- Time and goal oriented individual

CHARACTER REFERENCE

- Professor, Hern Kim, PhD,
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Institute,
Natural Science Campus, Myongji University,
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- Professor, Sangho Koo, PhD,
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I hereby certify that the above information is true and correct to the best of my knowledge.

Dr. Atul A. Pawar