Mohamed H. Hassan

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Scholar
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Education

Ph.D., Chemistry, Clarkson University, Potsdam, NY. **2023**

M.Sc., Inorganic Chemistry, Alexandria University, Egypt. **2012**

B.Sc., Chemistry & Biochemistry, Alexandria University, Egypt. **2006**

Research Experience

University of Pennsylvania, Department of Materials Science & Engineering Philadelphia, PA
Postdoctoral Research Fellow **2023-2025**

Clarkson University, Dept. of Chemistry and Biomolecular Science Potsdam, NY
Chemistry teaching and research assistant **2018-2023**

Massachusetts Institute of Technology, Dept. of Chemistry Cambridge, MA
Visiting graduate student **10-12/2019**

Zewail City of Science and Technology, Dept. of Materials Science Cairo, Egypt
Research & teaching assistant **2013-2018**

Rensselaer Polytechnic Institute, MSE Troy, New York
Visiting research assistant **05-08/2014**

Albany College of Pharmacy and Health Science Albany, New York
Visiting research assistant **02-05/2014**

Patents

1. Compositions and Methods for Producing Electrically Conductive Coordination Polymers and Uses Thereof, **Pending**, US 63/276,589.

Publications

25. Mohamed H. Hassan, Jintao Fu, Jiaxin Liu, Eric Detsi**.** Mitigating the P2–O2 phase transition complications in P2-$Na_x[Ni_{1/3}Mn_{2/3}]O_2$ Na-ion battery cathodes: To dope or not to dope, that is the question. *Materials Horizons* **2025**, Advance Article.

24. Ahmed S. Helal, Miryana Hémadi, John S. Lomas, Souad Ammar, Ali Abdelhafiz, Said M. El-Sheikh, Sheta M. Sheta, Mitchell Galanek, **Mohamed H. Hassan**, Jeng-Kuei Chang, Ju Li. Uranium removal from environmental water and nuclear waste: Nanomaterial solutions and their environmental sustainability. *Chemical Engineering Journal* **2025**, *507*, 160298.

23. Jintao Fu, **Mohamed H. Hassan**, Jiaxin Liu, Hyeongjun Koh, Alexander K. Ng, Chiara Bruzzi, John S. Corsi, Eric Detsi. Environmentally responsible synthesis of high-performance P2-$Na_{2/3}[Ni_{1/3}Mn_{2/3}]O_2$ sodium-ion battery cathodes. *J. Mater. Chem. A* **2024**, *12*, 26857-26865.

22. Mohamed H. Hassan, Reem Khan, Daniel Andreescu, Shreetu Shrestha, Mircea Cotlet, Silvana Andreescu. Atomically Precise Hexanuclear Ce(IV) Clusters as Functional Fluorescent Nanosensors for Rapid One-Step Detection of PFAS. *Adv. Funct. Mater.* **2024**, 2403364.

21. Hyeongjun Koh, **Mohamed H. Hassan**, Stella Lin, Lin Wang, Eric A. Stach, Eric Detsi. Liquid Na-K alloy is not viable anode material for High-Performance Na-Ion batteries. *Chemical Engineering Journal* **2024**, *490*,151578.

20. Ali Othman, Akshay Gowda, Daniel Andreescu, **Mohamed H. Hassan**, S. V. Babu, Jihoon Seo, Silvana Andreescu. Two decades of ceria nanoparticles research: structure, properties and emerging applications. *Materials Horizons* **2024**, *11*, 3213-3266**.**

19. Mohamed H. Hassan, Silvana Andreescu. Tuning the Fluorometric Sensing of Phosphate on UiO-66-NH_2(Zr, Ce, Hf) Metal Nodes*. Inorganic Chemistry* **2023**, *62*, 20970–20979. **(Front cover)**

18. **Mohamed H. Hassan**, Rana R. Haikal, Mohamed H. Alkordi. Synergistic compounding of carbon nanotubes and metal-organic frameworks for oxygen-evolving electrocatalysis. *Materials Advances* **2022***, 3,* 7212-7218. **(Front cover)**

17. Reem Khan, Daniel Andreescu, **Mohamed H. Hassan**, Jingyun Ye, Silvana Andreescu. Nanoelectrochemistry Reveals Selective Interactions of Perfluoroalkyl Substances (PFASs) with Silver Nanoparticles. *Angew. Chem. Int. Ed.* **2022**, e202209164. **(Front cover)**

16. Mohamed H. Hassan, Reem Khan, Silvana Andreescu. Advances in Electrochemical Detection Methods for Measuring Contaminants of Emerging Concerns. *Electrochem Sci. Adv.* **2021**, *2*, e2100184.

15. Mohamed H. Hassan, Robert Stanton, Jeremy Secora, Dhara Trivedi, Silvana Andreescu. Ultrafast Removal of Phosphate from Eutrophic Waters Using a Cerium-Based Metal–Organic Framework. *ACS Appl. Mater. Interfaces* **2020**, *12*, 52788–52796.

14. Gehan Ahmed, Safa Khalil W. ElHotaby, Lamya Abbas, Abdel Razik Farrag, Wafaa Abdel Aal, Hadeer Sherif, Engy Abdel-Rahman, Saber Saber, Mahmoud Hassan, **Mohamed H. Hassan**, Maha Balgoon, SafaaQusti, Mamdooh Kotb, Sameh S. Ali. ATR-IR and EPR spectroscopy for following the membrane restoration of isolated cortical synaptosomes in aluminium-induced Alzheimer's disease – Like rat model. *Chemistry and Physics of Lipids*. **2020,** *231*, 104931.

13. Mohamed H. Hassan, Daniel Andreescu, Silvana Andreescu. Cerium Oxide Nanoparticles Stabilized within Metal–Organic Frameworks for the Degradation of Nerve Agents. *ACS Appl. Nano Mater.* **2020**, *3*, 3288-3294.

12. Rana R. Haikal, **Mohamed H. Hassan**, Mohamed H. Alkordi. Microporous Solids en Route to Heterogeneous Electrocatalysis: The Oxygen Reduction Reaction. *Energy Technology* **2019**, 1900964.

11. Gehan AR Ahmed, Safaa KH Khalil, Lamyaa Abbas, Hadeer HA Sherif, Engy A Abdel-Rahman, Saber H Saber, Mahmoud Hassan, **Mohamed H Hassan**, Sameh S Ali. ATR-IR and EPR spectroscopy for detecting the alterations in cortical synaptosomes induced by aluminum stress. *Spectrochim. Acta A*. **2020**, *228*, 117535.

10. Mohamed H. Hassan, Mohamed H. Alkordi, and Abdou Hassanien. Probing the conductivity of metal-organic framework-graphene nanocomposite. *Materials Letters* **2019**, *246*, 13-16.

9. Mohamed H. Hassan, Rana R. Haikal, Tawheed Hashem, Julia Rinck, Franz Koeniger, Peter Thissen, Stefan Heiβler, Christof Wöll, and Mohamed H. Alkordi. Electrically conductive, monolithic metal-organic framework-graphene (MOF@G) composite coatings. *ACS Appl. Mater. Interfaces* **2019**, *11*, 6442-6447.

8. Mohamed H. Hassan, A. B. Soliman, W. A. Elmehelmey, A. A. Abugable, S. G. Karakalos, M. Elbahri, A. Hassanien and M. H. Alkordi. A Ni-loaded, metal–organic framework–graphene composite as a precursor for in situ electrochemical deposition of a highly active and durable water oxidation nanocatalyst. *Chemical Communications*, **2019**, *55*, 31-34. **(Inside front cover)**

7. Mohamed H. Hassan, Omar El-Basha, Rana R. Haikal, Ahmed H. Ibrahim, and Mohamed H. Alkordi. Metallic Nanoparticles Assimilation within Metal–Organic Framework Monolith. *ACS Appl. Mater. Interfaces* **2018**, *10*, 32942-32945.

6. Shruti Suriyakumar, A. Manuel Stephan, N. Angulakshmi, **Mohamed H. Hassan**, and Mohamed H. Alkordi. Metal-Organic Framework@SiO_2 as permselective separator for lithium sulfur batteries. *J. Mater. Chem. A* **2018,** *6*, 14623-14632. **(Back cover)**

5. Worood A. El-Mehalmey, Ahmed H. Ibrahim, Arwa A. Abugable, **Mohamed H. Hassan**, Rana R. Haikal, Stavros G. Karakalos, Omar Zaki and Mohamed H. Alkordi. Metal-Organic framework@silica as stationary phase sorbent for rapid and cost-effective removal of hexavalent chromium. *J. Mater. Chem. A* **2018,** *6*, 2742-2751.

4. Ahmed B. Soliman, **Mohamed H. Hassan**, Tran Ngoc Huan, Arwa A. Abugable, Worood A. Elmehalmey, Stavros G.Karakalos, Manuel Tsotsalas, Marita Heinle, Mady Elbahri, Marc Fontecave, and Mohamed H. Alkordi. Pt Immobilization within a Tailored Porous-Organic Polymer–Graphene Composite: Opportunities in the Hydrogen Evolving Reaction. *ACS Catalysis* **2017**, *7*, 7847-7854.

3. Ahmed B. Soliman, **Mohamed H. Hassan**, Arwa A. Abougable, Stavros G. Karakalos, and Mohamed H. Alkordi. Post-synthetic immobilization of Ni ions in porous-organic polymer-graphene composite for the non-noble metal electrocatalytic water oxidation. *ChemCatChem* **2017**, *9*, 2946-2951. **(Front cover)**

2. Ahmed B. Soliman, Rana R. Haikal, Arwa A. Abugable, **Mohamed H. Hassan**, Stavros G. Karakalos, Perry J Pellechia, Hamdy H. Hassan, Magdi Habeeb Yacoub, and Mohamed H. Alkordi. Tailoring the oxygen reduction activity of hemoglobin through immobilization within microporous organic polymer-graphene composite. *ACS Appl. Mater. Interfaces* **2017**, *9*, 27918-27926. **(Front cover)**

1. Nemat Z Yassin; Siham M El-shenawy; Rehab F Abdel-rahman; Mostafa Yakoot; **Mohamed Hassan**; Sherine Helmy. Effect of a topical copper indomethacin gel on inflammatory parameters in a rat model of osteoarthritis. *Drug Design,*

Development and Therapy **2015**, *9*, 1491-1498.

Awards and Honors

- **Marquis Who's Who in America "Honored Listee"** **12/2024**
- **Outstanding Graduate Student Award (CU)** **04/2023**
- **Clarkson Technology Showcase (3rd Place)** **10/2022**
  "For developing portable sensor for measuring PFAS"
- **Sustainable Nanotechnology Organization student award** **09/2022**
- **CU President's innovation Challenge (Grand prize)** **04/2022**
  "For developing electrically conductive and pressure responsive smart textiles"
- **Phalanx Commendable Leadership Award (Inducted member)** **04/2022**
  "Clarkson University's highest honorary society"
- **Clarkson Technology Showcase Competition** **11/2021**
  "Winning project for wearable e-textile technology"
- **ECS Outstanding Student Chapter award** **10/2021**
  "In recognition of the chapter's efforts"
- **IEEE ICDH 2021 Award** **09/2021**
  "For developing novel coordination polymer used in wearable sensors"
- **The Electrochemical Society ECS travel grant award** **08/2021**
- **2021 EAS Graduate Student Research Award** **06/2021**
  "Outstanding talent for scientific research"
- **ACS Division of Environmental Chemistry Certificate of Merit** **04/2021**
- **CU President's innovation Challenge (First place, Prototype category)** **04/2021**
  "Winning design for porous material for mitigating water eutrophication"
- **CU President's innovation Challenge (First place, Showcase category)** **04/2020**
  "Winning design for self-disinfecting face masks-Clarkson University"
- **Clarkson Ignite fellowship** **03/2019**
  Karel Czanderna'77 and Dan Shirkey "80 Ignite Research Fellow
- **Nature Middle East** (highlighting the *ChemComm* 2018 paper). **11/2018**
- **Nature Middle East** (highlighting the *J. Mater. Chem. A* 2018 paper). **09/2018**
- **Scientific American magazine** (Interview for the Li-S battery separator paper)**.** **10/2018**
- ***ChemCatChem*** (Research highlight). **08/2017**
- **Best Teaching Assistant Award** (Zewail city of science & technology) **03/2015**
- **International Pharmaceutical Student's Federation Internship** **02/2014**
  3 candidates selected from 150 applicants.

Teaching Experience

- Applications of Synchrotron and electron techniques (TA, course coordinator) **Fall 2022**
- Spectroscopy CM 221 (Co-instructor) **Fall 2021**
- Biomedical Analysis and Instrumentation CM 406-506 (Co-instructor) **Spring 2021**
- CU Horizon spring program for high school students (Instructor) **Summer 2021**
- CU Horizon summer program for high school students (Instructor) **Summer 2022**
- CU Project Challenge program for high school students (Instructor) **Spring 2021**
- Teaching assistant for undergraduate chemistry 101, 102, 202, and MATSCI 303, 480, 301 courses at Zewail City of Science and Technology **2013-2018**

Entrepreneurial and Industrial Experience

- NSF Innovation Corps Program (I-Corps), Entrepreneurial Lead **07-09/2022**

Conference Presentations

- ECS 245th meeting (Oral) **06/2024**
- NYS Center of Excellence's first annual meeting (Poster) **03/2023**
- TechConnect Defense **09/2022**
- ACS Fall 2022 meeting (oral presentation & presider) **08/2022**
- ACS Fall 2021 meeting (oral and poster presentations) **08/2021**
- ACS Spring 2021 meeting (Oral presentation) **04/2021**
- Pittcon Conference and Expo (Oral presentation) **03/2021**
- 11th Annual Research Symposium organized and sponsored by the Northern New York Local Section of ACS (Judge in the poster session**)** **04/2021**
- Sustainable Nanotechnology Organization's 9th Conference (Oral presentation) **11/2020**
- ACS Spring 2020 National Meeting-Environmental Chemistry (Oral presentation) **03/2020**
- CAMP Annual Technical Meeting (Poster, Syracuse, NY) **05/2019**
- 3rd annual Research and Projects Showcase (Clarkson University, Judge) **04/2019**
- BioVision Alexandria Conference (Poster, Alex, Egypt) **04/2010**
- TWAS-ARO 5th annual meeting (Alex, Egypt) **12/2009**

Leadership

- ECS students' chapter President at Clarkson University **2020-2023**
- Supervised four undergraduate students at Clarkson University **2018-2023**
- Organized seminar series at the Shipley Distinguished Lectureship **2021 & 2022**
- Organized the common practice in PFAS detection and removal workshop at CU **06-2022**
- Organized Upstate New York's high school science communication workshops **2021 & 2022**
- Co-organized the IUPAC Global Women's breakfast **2021**

Professional Memberships

- ACS divisions of inorganic and analytical chemistry **2019-Present**
- Materials Research Society **2020-2023**
- Phalanx honorary society **2022-2023**