

Dear **Professor**

Greetings of the day!

Regarding the **Postdoctoral Research Associate**

I have submitted my thesis (January 2022) in Chemistry (Heterogeneous Catalysis, Metal ions adsorption, and Mesoporous silica material) from the Department of Chemistry and Chemical Biology at the Indian Institute of Technology (Indian School of Mines), India, under the supervision of Prof.-HAG Devendra Deo Pathak, Professor. My thesis title is “Synthesis of functionalized SBA-16 mesoporous materials: Applications in catalysis and removal of heavy metal ions from water.”

I am now seeking a postdoctoral opportunity that will allow me to expand my skills in a multidisciplinary environment.

As a doctoral researcher at ‘**IIT (ISM), Dhanbad**, I have been provided with an abundance of opportunities to define and solve problems, set and achieve goals, and strengthen my communication abilities. As a Ph.D. student, I complemented major coursework by learning Advanced Analytical Techniques, Advances in kinetics, thermodynamics and mechanisms of reactions, mesoporous materials and mesoporous chemistry, catalysis and water remediations. I have learned to read and analyse scientific literature and data and to connect them to my specific research. I have perfected existing experimental methods, designed and implemented new experiments, and become adept at analysing and interpreting subsequent results. In addition to these hard skills, I have further developed my communicative abilities through formal lab meeting presentations, workshops, conferences, seminars, and guiding juniors and postgraduates in their research. I had many achievements during my research, including eight international publications.

During my research period, I guided one master’s student and four Ph.D. junior research colleagues. I have good collaboration work skills and have worked with people having different research backgrounds during my research career. As a researcher, I believe I would be an asset to your department because I have a good work ethic and an understanding of the importance of core principles in mesoporous silica materials research, and good interpersonal skills. My ability to focus and work hard is reflected by my high academic percentages and scholastic achievements.

I have good expertise in the design and development of mesoporous silica (SBA-16, SBA- 15, MCM-41) based, Graphene Oxide, Coal Fly Ash based composite catalysts for

various organic transformations like Knoevenagel condensation reaction, synthesis of pyran-annulated compounds, synthesis of 2-iminothiazolidin-4-ones, and amide formation in environmentally benign conditions. These moieties play an essential role in antimicrobial, antibacterial, anti-rheumatic, anti-cancer, cardiovascular, GSK-3 β inhibitor, hypotonic and antihypertensive activities. The synthesized composite also works as an adsorbent for dye degradation such as Malachite Green, Rhodamine 6G and Methyl Violet and selective toxic heavy metal ions adsorption (Pb²⁺, Hg²⁺, Cd²⁺, Cu²⁺ and Zn²⁺) from aqueous solutions. I have acquired a deep understanding of operating characterizing tools including PXRD, FESEM, EDAX, HRTEM, BET, TG-DTA, TPD (-CO₂, -NH₃), Solid-state ¹³C NMR, XPS, FT-IR, during these investigations UV-Visible Spectrophotometer, HR-MASS spectrometry, ¹H NMR, ¹³C{¹H} NMR spectroscopy, titration, and ICP-MS that are used in this field. I am familiar with using chemistry-related software like Origin Pro8.5, Origin Pro 2016 64Bit, Mendeley Desktop, ChemDraw 19, MestRe Nova, ImageJ, and Peak Fit. I have strong training in heterogeneous catalysis, adsorption, water remediation, mesoporous materials synthesis, and characterization.

I was awarded the **Indian Institute of Technology (Indian School of Mines) Fellowship** for 5 years to conduct a part of my research under the supervision of Prof.-HAG Devendra Deo Pathak. I was also qualified for the Graduate Aptitude Test in Engineering (GATE) 2016.

I believe that with my background knowledge base, perseverance, and diligence, I could contribute much to the enhancement of knowledge at your institution. I wish to attain excellence in the field of “Mesoporous Materials, Coal Fly ash, Graphene Oxide Heterogeneous catalysis and Water remediation.” I want to become a part of future technologies that will be the foundation for further advancements of the human race: **A Small but Useful Pebble.**

I am looking forward to hearing from you about the possibility of a Post-Doctoral associate position in your esteemed research group. I have attached a detailed **Curriculum Vitae (CV)**. If I can provide any further information about my qualifications, kindly do let me know. I can be reached at any time via email: radha.gupta1989@gmail.com
Thanks for your time, consideration, and forthcoming response.

Yours sincerely,

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