



TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO

ID CODE: 5070

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Chemistry**

Scientist- in - charge: **Prof. Laura Prati**

[Md. Imteyaz Alam]

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	Alam
Name	Md. Imteyaz Alam

PRESENT OCCUPATION

Appointment	Structure
Politecnico di Milano	Catalyst design for key energy/chemical conversion technologies

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree (Bachelor's)	B. Sc	J. P. University, Bihar, India	2006
Degree (Master's)	M. Sc.	University of Delhi, India	2009
Specialization	Agrochemical and Pest Management		
PhD	Chemistry	University of Delhi, India	2015
Master			
Degree of medical specialization			
Degree of European specialization			
Other			



REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date registration	of	Association	City

FOREIGN LANGUAGES

Languages	level of knowledge
English	C1
Hindi and Urdu	Native

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2019	Marie Skłodowska-Curie Actions Individual Fellowship from European Commission
2018	Gandhian Young Technological Innovation Award (15 projects selected per year) by President of India
2018	Biotechnology Ignition Grant (selection rate ~13%) from BIRAC, Govt. of India
2018	ACS International Student Chapter Award at Open House, IIT Delhi, India
2018	Highly Cited Authors (top 10%) in Energy & Sustainability portfolio, Royal Society of Chemistry, UK
2018	Invited as top 30 global researchers with travel support for MSCA Master Class at Politecnico di Milano, Italy
2017	International Travel Support from SERB, India to attend EUROPACAT-17 in Florence, Italy
2017	Best Oral Presenter Award in 7 th Asia Pacific Congress on Catalysis, ICT Mumbai, India
2016	National Postdoctoral Fellowship (competent over 1000 applications) from SERB, Govt. of India
2013	Awards of Good Practices by Department of Chemistry, University of Delhi in cultural festival 'Antardhwani-2013'
2012	Qualified CSIR-Senior Research Fellowship (National competition) for doctoral studies, Govt. of India
2012	Elsevier's top 10 downloaded article (J. Catal. 2012, 288, 8) within 3 months of publication, Elsevier, Netherlands
2012	RSC's Top-ten most accessed & cited article (Catal. Sci. Technol. 2012, 2, 2025), 25 Oct 2012, RSC, UK

TRAINING OR RESEARCH ACTIVITY

Department of Energy, Politecnico di Milano, Italy Marie Skłodowska-Curie Postdoctoral Fellow	(Nov 2019 - Present)
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Project: *Operando* Raman and theoretical studies for **rational design of Coke resistant catalyst** for syngas production

Advisor: Prof. Matteo Maestri

- Analysed and evaluated catalysts for CO₂ activation; established catalyst-structure-property-activity relationship
- Investigated catalyst deactivation mechanism using *Operando* Raman experiments and GC analysis
- Developed technology for renewable chemicals and energy from CO₂ by tuning catalyst properties
- Supported my advisor to develop ideas and enhance funding opportunities through proposal development and writing
- Collaborated, designed experiments, mentored students, reviewed literature, interpreted and published results
- Exercised significant independent judgment within broadly defined policies and practices to determine best method for accomplishing work and achieving objectives

WowChemE M&C Pvt. Ltd. (incubated at IIT Delhi, India till Sept 2019) (April 2018 - Oct 2019)

Founder and Principal Investigator

Project: Integrated fermentation and catalysis of biomass to food flavours, fuels and value-added chemicals (PI)

- Established an R&D team, collaborated with biotechnologists, engineers and theoretical chemists to innovate products
- Understand relevant patent and scientific literature within the biomass conversion technologies; understand important regulatory requirements affecting existing technology and markets
- Investigated new materials as an eco-friendly replacement to existing **carcinogenic** one for **pharma and agriculture industries**
- Design, prepare, and test new/improved formulations of individual components and complex mixtures of bioactive products
- **Slashed payroll costs 20%** by negotiating pricing with vendors without compromising with safety and quality
- Executed 3 research projects to **manage, innovate and scaling up** new products (e.g., smart textiles) & deliverables
- Skilled on separation/purification science (chromatography, freeze-drying, solvent-extraction, distillation and crystallization)

Department of Chemical Engineering, IIT Delhi, Delhi (August 2014 - March 2018)

Post Doctorate

Project: Catalysis for biomass conversion to value-added chemicals

Advisor: Prof. M. Ali Haider

- **Identified** a novel biomass-derived platform chemical and brought it to larger audience after thorough transformation studies
- Used SciFinder for new patents or technology search; develop capabilities in analyzing and understanding the implications of prior art and competitive technology
- Developed biomass transformation routes for **fuels, food supplements, monomers and medicines** in glass and high-pressure reactors
- **Designed** and **screened** catalysts for mild to extreme condition reactions e.g., isomerization, condensation, ring-opening, HDO etc.
- Performed heterogeneous catalysis, catalyst-structure-activity relationship using chromatography, spectroscopy and surface studies
- Used FTIR, UV-vis, XRD, TEM, SEM, TGA/DTA, TPD, XPS, BET GC, GCMS, HPLC and porosimetric tools



- Coordinated and negotiated with vendors and **slashed ~30%** to the total cost of equipment procured
- Collaborated with computational chemists for understanding and verification of chemical phenomena
- Prepared new/existing industrial metal-based catalysts and applied for chemicals and energy conversion technologies
- Experienced in characterizing nanoparticulate materials and organic products using chromatography, spectroscopy, microscopy
- **Mentored/trained** B. Tech. (8), M. Tech. (5) and M. Sc. (2) projects for IIT Delhi students and young interns
- Wrote projects, patents and technical reports detailing processes, products, tests and project completion reports

Ph. D. Research, University of Delhi, India

(May 2011 - August 2014)

Ph. D. Student

Thesis: Catalysis for biomass conversion to value-added chemicals **Supervisor:** Dr. Basudeb Saha

- Synthesized and characterized ionic liquids for sugars and raw biomass conversion to furan-derived molecules
- Performed structure elucidation, confirmation and validation of new molecules using XRD, TEM, SEM, TGA/DTA, BET, TPD, FT-IR, GC-MS and NMR spectroscopy
- Analyzed organic/inorganic molecules and understand catalysis through chromatographic, surface and spectroscopic techniques
- Designed, developed and tested solid acid catalysts (metal oxide, metal phosphates) for fuels and chemicals
- Determined structure-activity relations using spectroscopic, chromatographic, microscopic/surface characterization tools
- Maintained and updated laboratory supply lists and inventory logs

Post-M. Sc. Research, IARI, Delhi, India

(July 2010 - May 2011)

Senior Research Fellow

- Developed agrochemicals formulations and their release studies in solid supports (fly ash, SiO₂, TiO₂), soil and water
- **Method development and validation** on UV-Vis, HPLC, GC and FTIR to detect **technical and formulated agrochemicals**
- Performed media preparation, cell culture and biological activities of agrochemicals on bacteria, fungi and blue-green algae
- Isolated and analyzed pesticide residues from the soil, algae, crop leaves and vegetables
- Evaluated shelf life of formulated agrochemical products using reported protocol
- Evaluated safety procedures for the laboratory to ensure compliance and improved those standards where necessary

SC Johnson Products Pvt. Ltd, Delhi

(July 2009 - June 2010)

RD&E Chemist

- Strong laboratory skills, including use of lab equipment, HPLC, GC, UV-Vis., pH meter
- Compiled test information and analyzed it to determine how efficiently processes and equipment (HPLC, GC, Viscometer etc.) were working, diagnose problems, and create and implement solutions.
- Performed storage and **emulsion stability**, weight loss, **release study**, and active ingredient tests
- Documented and prepared timely reports on the tests conducted and results obtained
- Provide test results for existing and competitive products when required by Marketing/Sales
- Maintain laboratory notebooks and perform testing sheets in compliance with GMP requirements



PROJECT ACTIVITY

Year	Project
2019-Present	Rational design of Coke resistant catalyst using <i>Operando</i> Raman and theoretical studies for syngas production
2018-2019	Integrated fermentation and catalysis of biomass to food flavours, fuels and value-added chemicals
2014-2018	Understanding solvent and catalyst role in biomass conversion to fuels and value-added chemicals production
2011-2014	Catalysis for biomass conversion to value-added chemicals

PATENTS

Patent
1. <i>Development of functional textiles for insect repellent and antibacterial properties</i> , Indian Patent Application No.: 202111000228, Date of filing: January 04, 2021
2. <i>Process for producing 3-substituted 4-hydroxycoumarin</i> , M. A. Haider, <i>Indian Patent Application No.</i> 201911051834
3. <i>A process for producing trimellitic acid from biomass</i> , Indian Patent Application No.: 202011000319; PCT/IB2020/051226, Filed on 03/01/2020
4. <i>Electrodialytic purification of fermentation derived lactones and catalytic upgrading</i> , Indian Patent Application No. 201911044154 of 31.10.2019
5. <i>Process to produce δ-decalactone by integrated fermentation and catalytic processing of biomass</i> , Indian Patent Application No. 201711037804, Filed on 25/10/2017.
6. Indian Patent 316744, <i>Process for the preparation of hydric alcohols</i> (Granted)
7. Indian Patent 310920, <i>A process for the production of unsaturated C₉ linear ketones</i> (Granted)

CONGRESSES AND SEMINARS

Date	Title	Place
March 17-19, 2021	Energy and Chemicals from waste, International Workshop on Green & Sustainable Energy Storage/Conversion (Online), (Plenary Lecture)	Dept. of Chemistry, CRSU, Jind, Haryana (India)
May 29-30, 2019	<i>Role of intellectual property rights in innovations and new product development</i> in a National Seminar on "Intellectual Property Rights" (KEYNOTE ADDRESS)	D. K College Dumraon (V. K. S. U, Ara, Bihar)
April 3-4, 2019	<i>High-value chemicals from low-value and high volume biorenewable feedstocks</i> (Invited talk) in National Science	Munger University, Munger, Bihar, India



	Seminar on “Future India: Science & Technology” (NSFIST 2019)	
16th - 18th December 2018	An integrated fermentation and catalytic approach for the production and valorization of biorenewable platform molecule, 6-acyl- α -pyrone (talk), Bioprocessing India 2018	Lecture Hall Complex, IIT Delhi, India
Sept. 28, 2018	<i>Valorization of biomass-based 6-pentyl-α-pyrone into food flavor, jet fuel precursor and value-added chemicals</i> in one day conference (Invited talk), Thieme Chemistry: Science of Synthesis	Department of Chemistry, University of Delhi, India
April 6-7, 2018	<i>Valorization of biomass-derived feedstocks into food flavors and value-added chemicals (Invited talk)</i> , International Seminar on Green Chemistry: Synthesis, Processing, and Devices	Veer Kunwar Singh University, Ara, Bihar, India
31 st August 2017	<i>Catalytic transformation of bio-based feedstocks to value-added chemicals and fuels (Invited talk)</i>	National Institute of Chemistry, Ljubljana, Slovenia
17-21 Jan 2017	<i>Selective deoxygenation of biomass derived molecules to high value chemicals and Fuels</i> in The Asia-Pacific Congress on Catalysis (APCAT) -7 in the session ‘Biomass’ (Oral)	Hotel The Lalit, Organised by ICT Mumbai, India
15-17 Jan 2015	<i>Ionic liquid catalyzed valorization of non-food biomass into specialty chemicals and fuels (Oral)</i> , 5 th Asia Oceanic Conference on Green and Sustainable Chemistry	at India Habitat Centre, Delhi, India
28-29 April 2014	<i>Synthesis and application of dual acidic titanium phosphate for sugar conversion to 5-hydroxymethyl furfural (Oral)</i> , National Conference on nanotechnology and renewable energy	, Department of Applied Science and Humanities, India

PUBLICATIONS

Book chapters
<i>Catalytic Production of High-Value Chemicals from High Volume Non-food Biomass</i> . In: Pant K.K., Gupta S.K., Ahmad E. (eds) Catalysis for Clean Energy and Environmental Sustainability. Springer, Cham. 2021, https://doi.org/10.1007/978-3-030-65017-9_18 , ISBN-13: 978-3030650162
<i>Biological Routes for the Synthesis of Platform Chemicals from Biomass Feedstocks</i> , Microbial Applications Vol.2: Biomedicine, Agriculture, and Industry, Kalia, V.C. (Ed.), Chapter 8 Springer , 2017, 153-166, ISBN 978-3-319-52668-3
<i>Integrated bio- and chemo- catalytic processing for biorenewable chemicals and fuels, Sustainable catalytic processes</i> , Chapter 6, 157-177, Elsevier , 2015, doi.org/10.1016/B978-0-444-59567-6.00006-6 , Print Book ISBN:9780444595676
<i>Integrated bio- and chemo- catalytic processing for biorenewable chemicals and fuels, Sustainable catalytic processes</i> , Chapter 6, 157-177, Elsevier , 2015, doi.org/10.1016/B978-0-444-59567-6.00006-6 , Print Book ISBN:9780444595676



Articles in reviews
M. I. Alam, R. Cheula, G. Moroni, L. Nardi, M. Maestri, <i>Mechanistic and multistep aspects of the thermo-catalytic CO₂ conversion to C1 products</i> , <i>Catal. Sci. Technol.</i> 2021 (Accepted) [IF: 6.2]
F. Jalid, M. Ali Haider, M. I. Alam, T. S. Khan, <i>Mechanistic Insights into Dominant Reaction Route and Catalyst Deactivation in Biogas Reforming using ab initio Microkinetic Modeling</i> , <i>Catal. Sci. Technol.</i> 2021, 11, 2130-2143 [IF: 6.2]
T. S. Khan, S. Gupta, M. Ahmad, M. I. Alam, M. A. Haider, <i>Effect of substituents and promoters on the Diels-Alder cycloaddition reaction in the biorenewable synthesis of trimellitic acid</i> , <i>RSC Advances</i> , 2020, 10 (5) 30656-30670 [I.F: 3.1]
E. Ahmad, S. Khan, M. I. Alam, K.K. Pant, M. A. Haider, <i>Understanding reaction kinetics, deprotonation and solvation of Brønsted acidic protons in heteropolyacid catalyzed synthesis of biorenewable alkyl levulinates</i> , <i>Chem. Engg. J.</i> 2020, 400, 125916 [IF: 10.7]
A. Bohre, M. I. Alam*, K. Avasthi, F. Ruiz-Zepeda, B. Likozar, <i>Low-temperature transformation of lignocellulose derived bioinspired molecules to aviation fuel precursor over magnesium-lanthanum mixed oxide catalyst</i> , <i>Appl. Catal. B. Env.</i> 2020, 276, 119069 [IF: 19.5]
S. Gupta, M. I. Alam, T. S. Khan, M. A. Haider, <i>Mechanistic Approaches Towards Rational Design of a Heterogeneous Catalyst for Ring-Opening and Deoxygenation of Biomass-Derived Cyclic Compounds</i> , <i>ACS Sustain. Chem. Eng.</i> 2019, 7, 12, 10165-10181 [IF: 8.2]
E. Ahmad, M. I. Alam, K.K. Pant, M. A. Haider, <i>Insights into the Synthesis of Ethyl Levulinate under Microwave and Nonmicrowave Heating Conditions</i> , <i>Ind. Eng. Chem. Res.</i> , 2019, 58, 35, 16055-16064 [IF: 3.7]
M. I. Alam*, T. S. Khan, M. A. Haider, <i>Alternate biobased route to produce δ-decalactone, elucidating the role of solvent and hydrogen production in catalytic transfer hydrogenation</i> , <i>ACS Sustain. Chem. Eng.</i> 2019, 7, 3, 2894-2898 [IF: 8.2]
M. I. Alam*, S. De, T. S. Khan, M. A. Haider, B. Saha, <i>Acid functionalized ionic liquid catalysed transformation of non-food biomass into platform chemical and fuel additive</i> , <i>Ind. Crops Prod.</i> 2018, 123, 629-637. [IF: 5.6]
M. I. Alam*, S. De, T. S. Khan, M. A. Haider, B. Saha, <i>Acid functionalized ionic liquid catalysed transformation of non-food biomass into platform chemical and fuel additive</i> , <i>Ind. Crops Prod.</i> 2018, 123, 629-637. [IF: 5.6]
T. S. Khan, S. Gupta, P. Bandolkar, M. I. Alam, M. A. Haider, <i>On the Role of Oxocarbenium Ions Formed in Brønsted Acidic Condition on γ-Al₂O₃ Surface in the Ring-Opening of γ-Valerolactone</i> , <i>Appl. Catal. A: Gen.</i> 2018, 560, 66-72. [I.F: 5.7]
M. Gupta, T. S. Khan, S. Gupta, M. I. Alam, M. Agarwal, M. A. Haider, 2017, <i>Non-bonding and bonding interactions of biogenic impurities with the metal catalyst and the design of bi-metallic alloys</i> , <i>J. Catal.</i> 2017, 352, 542-556. [I.F: 7.9]
A. Bohre, D. Gupta, M. I. Alam, R. K. Sharma, B. Saha, 2017, <i>Aerobic oxidation of Isoeugenol to vanillin with copper oxide doped reduced graphene oxide</i> , <i>ChemistrySelect</i> 2 (10), 3129-3136. [IF: 2.1]
T. S. Khan, S. Gupta, M. I. Alam, M. A. Haider, 2016, <i>Reactivity Descriptor for Retro Diels-Alder Reaction of Partially Saturated 2-Pyrones: DFT Study on Substituents and Solvents Effect</i> , <i>RSC Adv.</i> 6, 101697-101706. [I.F: 3.3]
M. I. Alam*, S. Gupta, A. Bohre, E. Ahmad, T. S. Khan, B. Saha, M. A. Haider, 2016, <i>Development of 6-amyral-pyrone as a potential biomass-derived platform molecule</i> , <i>Green Chem.</i> 18, 6431-6435 [I.F: 9.5]
E. Ahmad, M. I. Alam, K.K. Pant, M. Ali Haider, <i>Catalytic and Mechanistic Insights into the Production of Ethyl Levulinate from Biorenewable Feedstocks</i> , <i>Green Chem.</i> 2016, 18, 4804-4823. [I.F: 9.5] Cover page illustration



S. Gupta, M. I. Alam, T. S. Khan, N. Sinha, M. A. Haider, 2016, <i>On the mechanism of retro Diels-Alder reaction of partially saturated 2-pyrones to produce biorenewable chemicals lactones</i> , <i>RSC Adv.</i> 6, 60433-60445. [IF: 3.3]
S. Gupta, R. Arora, N. Sinha, M. I. Alam, M. A. Haider, 2016, <i>Mechanistic insights of ring opening of biomass-derived lactones</i> , <i>RSC Adv.</i> 6, 12932-12942. [IF: 3.1]
M. I. Alam, S. De, B. Singh, M. M. Abu-Omar, B. Saha, 2014, <i>Titaniumhydrogenphosphate: an efficient dual acidic catalyst for 5-hydroxymethylfurfural (HMF) production</i> , <i>Appl. Catal. A: Gen.</i> 486, 42-48. [I.F: 5.7]
M. I. Alam, S. De, S. Dutta, B. Saha, 2012, <i>Solid-acid and ionic-liquid catalyzed one-pot transformation of biorenewable substrates into a platform chemical and a promising biofuel</i> , <i>RSC Adv.</i> 2,6890-6896. [IF: 3.3]
S. Dutta, S. De, M. I. Alam, M. Abu-Omar, B. Saha, 2012, <i>Direct conversion of cellulose and lignocellulosic biomass into chemicals and biofuel with metal chloride catalysts</i> , <i>J. Catal.</i> 288, 8-15. [I.F: 7.9] Top 10 Most Downloaded article
S. Dutta, S. De, B. Saha, Md. I. Alam, 2012, <i>Advances in the conversion of hemicellulosic biomass to furfural and upgrade to biofuels</i> , <i>Catal. Sci. Technol.</i> 2, 2025-2036. [IF: 6.22] Top-ten most accessed & cited article
R. Kumar, M. Gopal, S. Pabbi, S. Paul, M. I. Alam, S. Yadav, K. K. Nair, N. Chauhan, C. Srivastava, R. Gogoi, P. K. Singh, A. Goswami, 2016, <i>Effect of Nanohectonazole on Nitrogen Fixing Blue Green Algae and Bacteria</i> , <i>J. Nanosci. Nanotechnol.</i> 16, 643-647. [IF: 1.5]
R. Kumar, K. K. Nair, M. I. Alam, R. Gogoi, P. K. Singh, C. Srivastava, M. Gopal, A. Goswami, 2015, <i>Development and quality control of nanohectonazole as an effective fungicide and its biosafety studies on soil nitrifiers</i> , <i>J. Nanosc. & Nanotechn.</i> 15, 1350-1356. [IF: 1.5]
R. Gogoi, P. K. Singh, R. Kumar, K. K. Nair, I. Alam, C. Srivastava, S. Yadav, M. Gopal, S. R. Choudhury, A. Goswami, <i>Suitability of Nano-sulphur for Biorational Management of Powdery mildew of Okra (Abelmoschus esculentus Moench) caused by Erysiphe cichoracearum</i> , <i>J. Plant Pathology & Microbiology</i> , 2013, 4, 1-4
R. K. Kumar, K. K. Nair, M. I. Alam, R. Gogoi, P. K. Singh, C. Srivastava, S. Yadav, M. Gopal, 2011, <i>A simple method for the estimation of sulfur in nanoformulations by UV spectrophotometry</i> , <i>Curr. Sci. India</i> , 100, 1542-1546. [IF: 0.9]

Congress proceedings
[title, structure, place, year]
[title, structure, place, year]
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OTHER INFORMATION

Expert reviewer for international scientific journals (Details available on my Publons profile: https://publons.com/a/1383207/). I have reviewed over 60 journal articles of Royal Society of Chemistry, American Chemical Society, Elsevier, Springer and Taylor and Francis.
Mentored over 16 scholars including PhD, master's and bachelor's degree students

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.



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Please DO NOT SIGN this form.

Place and date: Milano, 21/09/2021