

## C. V. of Dr. Mohammad Ismail

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### **BRIEF PROFILE**

- Born in Bangladesh on November 1, 1978.
- Ph.D. in Engineering (Chemical) from University of Cambridge, UK on July 2016.
- 16+ years experiences of *teaching and research* at the University, Govt. and private research Organizations (University of Cambridge, University of Dhaka, BCSIR, Insight)
- Having 12+ years *Consultancy experiences* on Environment & Energy, Air pollution & Clean Fuel, CCS & Hydrogen Production; Climate Change, Pollution control & Waste management; Textile, Leather and Pharmaceutical Chemicals & Technologies etc.
- 10+ years project management experience with Department of Environment (DoE), Ministry of Environment, Forestry & Climate Change (MoEFCC), Ministry of Science & Technology, Ministry of Education of Bangladesh, UNDP, ADB etc.
- 10+ years of entrepreneurial and administrative experiences.
- Management experience of 12+ Research and Development Projects.
- Awarded IDB-Cambridge Scholarship (2012–2016), RSC & Ford of Britain grants etc.
- Authored and co-authored more than 40 peer reviewed journal papers
- Presented research findings in more than 40 International & National conferences.
- Supervised 40+ undergraduate & graduate (M.Sc., M.Phil. & Ph.D) student's thesis.
- Reviewer of 5+ Research Journals.

### **Academic Qualification**

- **PhD in Engineering: University of Cambridge, United Kingdom (2012 - 2016):**  
Dept. of Engineering. **Area:** *Clean Energy*, Carbon Capture, and Electricity from coal.  
**Thesis title:** *Development and Evaluation of Iron Oxide-based Oxygen Carriers for Chemical Looping Combustion and Hydrogen Production.*
- **Master's of Science (M.S.)** in Applied Chemistry & Chemical Technology, University of Dhaka, Bangladesh, 2002 (Exam.: 2005), Result: 1<sup>st</sup> class 1<sup>st</sup>.  
**Thesis Title:** *Synthesis of some industrially important petrochemicals by benzylation and tert.-butylation of aromatic compounds.*
- **Bachelor of Science (4 Years Course)** in Applied Chemistry & Chemical Technology, University of Dhaka, Bangladesh, 2001 (Exam.: 2003), Result: 1<sup>st</sup> class 2<sup>nd</sup>
- **H.S.C:** Chittagong College, Chittagong, Bangladesh, 1996. 1<sup>st</sup> Class

- **S.S.C:** Kalauzan Dr. Y. B. R. S. High School, Chittagong, Bangladesh, 1994. 1<sup>st</sup> Class

## **Professional/ Job Experiences**

<b>2018 –till date</b>	<b>Associate Professor</b> , Department of Applied Chemistry & Chemical Engineering, University of Dhaka.
<b>2010 – 2017</b>	<b>Assistant Professor</b> , Department of Applied Chemistry & Chemical Engineering, University of Dhaka.
<b>Jan. 2016 – Sep. 16</b>	<b>Research Associate</b> , Dept. of Engineering, University of Cambridge, UK
<b>2008 - 2010</b>	<b>Lecturer</b> , Department of Applied Chemistry & Chemical Engineering, University of Dhaka.
<b>2008</b>	<b>Assistant Secretary &amp; Executive Magistrate</b> , BCS (Administration)
<b>2006 - 08</b>	<b>Scientific Officer</b> , Bangladesh Council of Scientific & Ind. Research
<b>Apr. 2006 - June 06</b>	<b>Research Fellow</b> , Bangladesh Council of Scientific & Ind. Research
<b>Jan. 2004 - Jan. 06</b>	<b>Research Fellow</b> , Faculty of Science, INSIGHT (Research & Dev.)

## **Research and Consultancy Interests**

- Environment and Energy, Pollution & its control, Green and Sustainable Technology
- Carbon Capture, Utilization and Storage, Clean Fuel/Hydrogen Production
- Climate Change mitigation, Chemicals & Waste management
- Biofuel, Air Quality Monitoring etc.
- Textile, Leather & Pharmaceutical Raw materials, Chemicals and Technologies

## **Consultancy & Entrepreneurial Experiences**

<b>July 2019 to till date</b>	<b>National Consultant- Capture Expert (Power) at Asian Development Bank (ADB).</b> To study the Sustainable Energy Technology - Prefeasibility Analysis for Carbon Capture, Utilization and Storage (CCUS)
<b>Apr. 2018 – Nov. 2018</b>	<b>National Consultant- <i>Climate Mitigation Specialist</i> at United Nation Development Programme (UNDP), Bangladesh</b> Supported the UNDP projects portfolio on energy & Environment, waste & chemicals ( Prodoc.& PIF development, project review, Collaboration with DoE, MoEFCC etc.)
<b>2011 – till date</b>	<b>Executive Director, Dorpan Group, Dhaka, Bangladesh</b> Startup company; determining the company's strategic objectives and policies; monitoring progress and managing staffs & funds.
<b>2016- 2019</b>	<b>Director, MCI Education Services Ltd., UK - Bangladesh</b> Startup company; Working on Education Services.

- 2008 – 2016**      **Technical Advisor, JIPS Chemicals Industries Ltd., Bangladesh**  
 Consultancy in the development of softener for textile clothes and other textile chemicals.
- 2011**              **Consultant, Clean Air & Sustainable Env. Project of World Bank**  
 Collected air samples and provided analysis services

### **Research & Development Projects:**

- 2019 -20** a) Hybrid (solar, wave) Powered Micro-grid for Remote Areas using Second-Life Li-ion Batteries (LiBs) (*Global Challenge Research Fund*; Joint Project with Queen Mary University, London, UK and University of Dhaka; Project Id: ECS1000G) (49,590 GBP).
- b) Eco-friendly Biofuel and Activated Carbon Production from Agro-residues and Non-edible Seeds (MOST, 0.4 million BDT)
- 2018 -21**      Eco-friendly Biofuel Production from Municipal Solid Waste and Non-edible Seeds, (BANBEIS, MoE, 1.5 million BDT) (**2018 -2021**)
- 2018 -19**      Synthesis & Evaluation of Novel Oxygen Carriers for CO<sub>2</sub> Capture & Hydrogen Production in Power Plant (*2<sup>nd</sup> Phase*) (MOST, 0.4 million BDT)
- 2017-18** a) Synthesis & Evaluation of Novel Oxygen Carriers for CO<sub>2</sub> Capture & Hydrogen Production in Power Plant (MOST, 2017 -18, 0.4 million BDT).
- b) Production of Bio-diesel and Bio-oil from Non-edible Sal Seed (*Shorea robusta*) under an Integrated Scheme (DU Project, 76 K BDT)
- 2016-17** a) Nano-composite Oxygen Carriers for Multicycle High Temperature CO<sub>2</sub> Capture and H<sub>2</sub> Production in Power Plants (Twas grant, 1.3 million BDT).
- b) Oxygen Carriers development from locally available sources for CO<sub>2</sub> Capture in Power Plants (CCCSRU, DU Project, 2016 -17, 50 K BDT).
- 2010-11:**      ‘Mass and energy balance and cost analysis of the production of bio-oil from MSW: A feasibility study’- (MOST Project, 2010 – 2011, 1.2 million BDT).
- 2008-09:**      ‘Integrated Production of bio-diesel & Bio-oil from locally available non-edible plant sources’- (MOST Project, 2008, 100K BDT).
- 2007-08:**      ‘Analysis of condensate of Bibiyana & Kailastilla Gas fields & upgradation to Petro-products’- (BCSIR-China Petrochemical Int. Co. Ltd, 0.9 million BDT).
- 2006-07:**      ‘Production of lube oil & gasoline from used lube oil & furnace oil’- BCSIR project (100K BDT).
- 2006:**            ‘Development of herbal drugs for treatment of diabetic mellitus from plant sources and its applications in animals’- BCSIR fellowship project.
- 2005:**            ‘Synthesis of some industrially important petrochemicals by benzylation and tert.-butylation of aromatic compounds’- M.S. Degree thesis.

### **Training & Workshop**

- 2019**      Promoting Carbon Capture and Storage in the People's Republic of China and Indonesia - Opportunities for Cooperation on CCUS Research Roundtable and Asia Wakes Up to CCUS Deep Dive Workshop; June 19-21, 2019 Manila, Philippine.

- 2018** a) ‘Zero Hunger, Zero Emissions’- organized by Environmental Change Institute, University of Oxford, UK; Oxfam UK and ICCCAD, September,12, 2018 Dhaka
- b) ‘Design, Implementation and Performance Evaluation of Biogas Plant’- organized by Institute of Energy, University of Dhaka, Dhaka, July 18, 2018
- c) Induction Workshop on ‘Teaching-Learning’ by CoETL, University of Dhaka, March 20 & 29, 2018, Dhaka
- 2015:** “Leadership in Action” – By Research Development Office, University of Cambridge, June 15 -17, 2015.
- 2014** “European Carbon Capture & Storage Research & Development Workshop (ECCSRD), Cranfield University, UK, June 18, 2014.
- 2013:** a) “Cambridge GRADschool for Researcher Development” at Wyboston Lakes (Organized by University of Cambridge), September 20 - 22, 2013.
- b) “Enterprisers” at Wyboston Lakes (Organized by Centre for Entrepreneurial Learning, Judge Business School, University of Cambridge), May 20 - 23, 2013.
- 2012** “Sustainable Energy Summer School” at University of Cambridge (organized by European Agency for Energy Security), August 26 - September 1, 2012.
- 2009:** “Bio-oil Upgradation: Technical review to assess the merit of the processes” at TERI (The Energy &Resources Institute), India, June 22 – July 28, 2009.
- 2007:** “Bio-oils from biomass and feasibility study of upgrading bio-oil to petro-fuels” at TERI, India, August 30 - December 29, 2007
- 2004:** “Industrial process unit operation & process control techniques" at Training Institute for Chemical Industries (TICI), Bangladesh, August 29 - September 28, 2004.
- 2003:** In-plant training at Karnaphuli Paper Mills Ltd, Rangamati, Sep. 06 – Oct. 01, 2003.

**Short in-plant trainings (2 -3 days in each plants) at:**

Tabani Beverage (Coca-Cola) Company Ltd., Dhaka, Mimi Chocolate Industry Ltd., Dhaka Savoy Ice-cream Industry Ltd., Dhaka, People Ceramic Industry, Gazipur. Global Capsule Ltd., Padma Caps & Glass Industry Ltd., Barishal, Opsonin Basic Chemicals Ltd, Opsonin Pharmaceutical & Opso Saline Ltd., Eastern Refinery Ltd., TSP Complex & Urea Fertilizer Ltd., Chittagong. Silco Pharmaceuticals Ltd., Sylhet, Chatak Cement Factory Ltd., Alim Industries Ltd., Sylhet, Suntec Energy Ltd., Sylhet; Ramu Rubber Processing Industry, Coxsbazar.

**Academic Course teaches:**

**H-102:** Chemical Engineering-I (Fundamentals of Chemical Engineering)

**ACCE 2202:** Chemical Engineering-II (Refrigeration & Air Conditioning, Membrane Tech.)

**H- 203.** Chemical Technology-III (Glass, Cement and Paint Technology)

**H-301:** Chemical Technology-III (Oil, Fat, Soap, Detergent and Dyes Technology)

**H-304:** Fuel and Petrochemical Engineering

**H-408:** Environmental Pollution and Industrial waste management

**MS- 502:** Energy conversion Engineering and Environment

**MS- 508:** Pharmaceutical Technology

**MS-Env 607:** Solar Energy and Its Application

### **Guest Teacher:**

1. Bangladesh Petroleum Institute (BPI),
2. Independent University of Bangladesh (IUB) and
3. East West University (EWU)

### **M.Sc Students thesis and B.Sc. Students project supervision:**

*A total of 18 M.Sc. students thesis and 25 B.Sc. (Hons) students project supervised in the area of Energy, Environment, Textile chemicals, Coal & Petroleum Biofuel, Pharmaceuticals etc.*

*Some of the projects are:*

1. Industrial Production of EDTA (*Ethylenediamine tetraacetic acid*) in Bangladesh
2. Prospects and Industrial Production of Polyurethane in Bangladesh
3. Production of biodiesel from castor oil, Karanja oil & its co-ignition characteristics. (2)
4. Production of bio-oil *via* vacuum pyrolysis of municipal solid waste, rice husk, castor cake (4).
5. Characterization and upgradation of indigenous clay minerals.
6. A study on the production of biodiesel from rubber seed oil (*hevea brasiliensis*) (2)

### **Publications:**

A total of 43 research articles published at international and national journals. These are-

#### **2020:**

43. **M. Ismail\***, A. Prodhan, M. Hasan, S. Sujan, & M. Hossain, ‘Production and Physico-chemical Characterization of Biodiesel Produced from Waste Cooking Oil Available in Bangladesh’. *Dhaka Univ. J. A. Sci, (Accepted), Ref (2000-05-6).*

42. H. Ahmmed, M. Halim, M. Mortuza and **M. Ismail\***, ‘Production, Process Optimization and Characterization of Bio-oil from Potato (*Solanum tuberosum*) Peel Waste’. *Dhaka Univ. J. A. Sci, (Accepted), Ref (2000-05-4).*

41. A. Prodhan, M. Hasan, S. Sujan, M. Hossain, M. Quaiyyum & **M. Ismail**, Production and Characterization of Biodiesel from Jatropha (*Jatropha curcas*) Seed Oil Available in Bangladesh; *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects, 2020, (Accepted) (ID: UESO-2019-2487.R1)*

40. A. Ahmad, M. A. Al-Mamun, M. Al-Mamun, S. Huque & **M. Ismail**. LFO Perovskites as Oxygen Carriers for Chemical Looping Oxygen Uncoupling (CLOU) Journal of Thermal Analysis and Calorimetry, In communication, 2020 (JTAC-D-20-02186).

39. M. Hasan, M. Islam, N. Akter, A. Chowdhury & **M. Ismail**, Evaluation of fuel properties of Sal (*Shorea robusta*) seed and its oil from their physico-chemical characteristics and thermal

analysis; *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 2020, p-1-12. DOI: [10.1080/15567036.2020.1774684](https://doi.org/10.1080/15567036.2020.1774684)

#### **2019:**

38. **M. Ismail**. Carbon Capture, Utilization and Storage (CCUS) in Power Plants of Bangladesh. *Journal of Aspects Min Miner Sci.* 3(3). AMMS. 000563. 2019. DOI: 10.31031/AMMS.2019.03.000563.

37. J. Farabi, E. Abtahizadeh & **M. Ismail**, Numerical Study of Non-Premixed MILD Combustion in DJHC Burner Using Eddy Dissipation Concept and Steady Diffusion Flamelet Approach; In communication, *Int. J. of Engineering & Manufacturing (IJEM)* (ID: 004149).

36. J. Farabi, **M. Ismail**, & E. Abtahizadeh. Simulation of Non-premixed Turbulent Natural Gas Combustion in Delft-Jet-in-Hot-Coflow (DJHC) Burner. *IEEE Xplore*, (doi: 10.1109/CIET.2018.8660868).

#### **2016:**

35. **M. Ismail**, W. Liu, M. Dunstan, S. Scott. Synthesis, Application and Carbonation Behaviour of  $\text{Ca}_2\text{Fe}_2\text{O}_5$  for Chemical Looping  $\text{H}_2$  Production. *Energy & Fuels*, 2016, 30 (8), pp 6220–6232; DOI: 10.1021/acs.energyfuels.6b00631).

34. M. Chan, W. Liu, **M. Ismail**, Y. Yang, S. Scott, J. Dennis. Improving hydrogen yields, and hydrogen:steam ratio in the chemical looping production of hydrogen using  $\text{Ca}_2\text{Fe}_2\text{O}_5$ . *Chemical Engineering Journal*, Volume 296, 15 July 2016, pp 406–411.

33. **M. Ismail**, W. Liu, M. Dunstan, S. Scott. Development and Performance of Iron Based Oxygen Carriers Containing Calcium Ferrites for Chemical Looping Combustion and Production of Hydrogen. *Int. Journal of Hydrogen Energy*, Vol 41, pp.4073-4084, 2016.

#### **2015:**

32. S. Sujan, M. Jamal, M. Hossain, M. Khan and **M. Ismail**. Analysis of gas condensate and its different fractions of Bibiyana gas field to produce valuable products. *Bangladesh J. Sci. Ind. Res.* 50(1), pp.59-64, 2015.

31. W. Liu, **M. Ismail**, M. Dunstan, W. Hu, Z. Jhang, P. Fennell, S. Scott & J. Dennis. Inhibiting the interaction between  $\text{FeO}$  and  $\text{Al}_2\text{O}_3$  during chemical looping production of hydrogen. *RSC Advances*, Vol 5 Issue-3, 2015, pp.1759-1771.

#### **2014:**

30. **M. Ismail**, W. Liu and S. Scott. The performance of  $\text{Fe}_2\text{O}_3$ - $\text{CaO}$  Oxygen Carriers and the Interaction of Iron Oxides with  $\text{CaO}$  during Chemical Looping Combustion and  $\text{H}_2$  production, *Energy Procedia*, Vol. 63, 2014, pp. 87-97.

#### **2013**

29. M. Islam, M. Haque, M. Rahman, **M. Ismail**, M. Hossain, S. Sujan, & M. Jamal. Physico-chemical Properties and Application of Biodiesel Produced from Non-edible Rubber (*Hevea brasiliensis*) Seed Oil through Transesterification.” *Jag. Univ. J. of Sci.* 2 (1): 107–115, 2013.

#### **2011:**

28. M. Islam, M. Jamal, S. Sujan, **M. Ismail**, M. Miah, M. Saha. Bio-oil from pyrolysis of rice husk. Journal of Biofuels. Vol-2, Issue-1: p01-07, 2011.

27. M. Saiful Islam, **M. Ismail**, M. Saha & M. Miah, Bio-oil from pyrolysis of bagasse. Dhaka Univ. J. A. Sci., Vol 2(1), 17-20, 2011(July).

26. A. Rahman, M. Reza, **M. Ismail**, M. Nurnabi and M. Haque. Production of biodiesel from Karanja (*Pongamia Pinnata*) oil and comparison of its fuel properties with commercial diesel. Dhaka Univ. J. A. Sci., Vol 2(1), 25-29, 2011(July).

25. M. Saha, B. Palma, D. Saha, M. Azim, S. Islam, **M. Ismail** & A. Rana, Reaction of p-Cresol with Indene in the Presence of Benzenesulphonic Acid. Dhaka Univ. J. A. Sci., Vol 2(1), 59-60, 2011(July).

24. M. Saha, B. Palma, S. Islam, D. Saha, M. Azim, M. Ashaduzzaman & **M. Ismail**, Reaction of o-Cresol with Indene in the Presence of Benzenesulphonic Acid. Dhaka Univ. J. A. Sci., Vol 2(1), 83-84, 2011(July). (Short Commun.).

23. M. Saha, M. Shahruzzaman, N. Sharmin, M. Hossain, M. Bhuyan, A. Chowdhury, D. Saha, **M. Ismail** & S. Islam. Application of experimental design to the reaction of o-cresol with cyclopentyl chloride. Dhaka Univ. J. Sci 59(1):109-116, 2011 (Jan.).

22. M. Shahruzzaman, M. Saha, N. Sharmin, M. Hossain, M. Bhuyan, A. Chowdhury, D. Saha, M. Alam & **M. Ismail**. "tert.-butylation of p-cresol with tert.-butyl chloride. Dhaka Univ. J. Sci 59(1):117-119, 2011 (January).

#### **2010:**

21. M. Shahruzzaman, M. Saha, N. Sharmin, M. Hossain, M. Galib, D. Saha, M. Alam & **M. Ismail**, "tert.-Butylation of o-Cresol", Dhaka U. J. A. Sci. & Eng., Vol.1(1), 37-42, 2010.

20. M. Saha, M. Shahruzzaman, N. Sharmin, M. Hossain, M. Galib, D. Saha, **M. Ismail** and S. Islam, "Application of Experimental Design to tert.-Methylcyclohexylation of p-Cresol", Dhaka Univ. J. A. Sci. & Eng., Vol.1(1), 23-30, 2010.

19. M. Miah, M. Islam S. Banik, M. Jamal, **M. Ismail**, M. Saha. Production of Bio-Oil From Municipal Solid Waste By Pyrolysis. B. J. Sci. Ind. Res. V. 45(2) 91-94, 2010.

18. M. Galib, M. Saha, D. Saha, H. Paul, T. Bhuyan, M. Shahruzzaman & **M. Ismail**; "tert.-methylcyclohexylation of o-cresol with methylcyclohexanol in the presence of Sulphuric Acid". Dhaka Univ. J. Sci 58(2):243-246, 2010 (July).

17. S. Islam, M. Saha, D. Saha, **M. Ismail**, M. Galib & N. Sharif, Application of statistical experimental design to benzoylation of p-chlorophenol. Bangladesh J. Sci. Ind. Res. Volume 45(2) 105-110, 2010.

16. S. Islam, M. Alam, **M. Ismail**, M. Galib, N. Sharif, M. Saha. A statistical approach to alkylation of p-cresol with cyclopentanol. Asian Journal of Chemistry, India, Vol-22, No. 2(2010), 1245-1250.

#### **2009:**

15. M. Jamal, **M. Ismail**, M. Miah, M. Haque, S. Banik, “Studies on the production of gasoline from Heavy oil (furnace oil) by thermal cracking. B. J. Sci. Ind. Res. Vol 44(4), 473-478, 2009.

14. M. Galib, M. Alam, D. Saha, **M. Ismail**, S. Islam, M. Saha. “Application of Plackett-Burman experimental design to tert.-methylcyclohexylation of p-chlorophenol.” J. of Chemistry and Technology of fuels and oils, Springer Publication, U.S.A. Volume-45(5), p 336-342, 2009.

13. M. Asaduzzaman, M. Saha, S. Islam, **M. Ismail**, N. Sharif and M. Galib. “A mathematical model for the alkylation of o-cresol with cyclohexanol”. *Bangladesh J. Sci. Ind. Res.* 44(2), 181-186, 2009.

#### **2008:**

12. **M. Ismail**, M. Hanif, M. Galib and M. Saha. “tert.-butylation of toluene: A statistical study” - *Bangladesh J. Sci. Ind. Res.* 43(4) 541-548, 2008.

11. **M. Ismail**, M. Saha, M. Siddiky, M. Alam and N. Sharif. “Reaction of Xylenes with tert.-Butylchloride in the Presence of Anhydrous Aluminium Chloride” – *J. Sci & Ind Res. (India)*. Vol **67**, May 2008, pp 371-373

10. **M. Ismail**, M. Tareque, P. Chakrabarty, M. Asaduzzaman, B. Palma and M. Saha. “Benzylation of Phenol with Benzyl Alcohol in the Presence of Perchloric Acid” - *Dhaka Univ. J. Sci* 56 (2):175-177, 2008 (July).

9. M. Saha, **M. Ismail**, H. Dey, M. Karim & D. Saha “Alkylation of Cresols with Cyclohexene in the Presence of *p*-Toluenesulphonic Acid” – *Bang. J. Sci. Ind. Res.* 43(2), 277-282, 2008.

#### **2007:**

8. M. Saha, **M. Ismail**, H. Dey, M. Karim & D. Saha. “Alkylation of Xylenes with Cyclohexene in the Presence of *p*-Toluenesulphonic Acid” *B. J. Sci. Ind. Res.* 42(4), 489-494, 2007.

7. M. Karim, **M. Ismail**, S. Islam, D. Saha & M. Saha\*, “Alkylation of *m*-Cresol with Cyclopentene in the Presence of *p*-Toluenesulphonic Acid” *B. J. S. I. Res* 42(4), 499-502, 2007.

6. M. Nurnabi & **M. Ismail**, “Synthesis of biologically important chiral monopholine derivatives”. *Bangladesh J. Sci. Ind. Res.* 42 (2), 133-146, 2007.

5. **M. Ismail**, M. Jamal, S. Islam, M. Alam, M. Ashaduzzaman & M. Saha. “A mathematical model for the benzylation of *p*-cresol with benzyl alcohol”-*B. J. S. Ind. Res.* 42(2), p187, 2007.

4. B. Palma, M. Azim, **M. Ismail**, D. Saha, M. Kader & M. Saha. 'A Mathematical model for the indylation of *m*-Cresol with Indene in the presence of Benzenesulphonic Acid' *Bangladesh J. Sci. Ind. Res.* 42 (1),1-8, 2007.

#### **2006:**

3. M. Tareq, **M. Ismail**, S. Islam, M. Kamaruzzaman and M. Saha. “Reaction of Xylenes with Benzyl chloride in the presence of anhydrous aluminum chloride.” *Bangladesh J. Sci. Ind. Res.* 41(3-4), 251-256, 2006.

2. M. Tareq, **M. Ismail**, P. Chakravarty, A. Rana & M. Saha\*. “Benzylation of Phenol with Benzyl alcohol in the presence of Sulphuric Acid”. *B. J. Sci. Ind. Res.* 41, 257-261, 2006.

#### **2005:**



1. M. Karim, M. Ismail, M. Kamaruzzaman & M. Saha\*. "Alkylation of *o*-Cresol with Cyclopentene in the presence of *p*-Toluenesulphonic Acid"-Bangladesh J. Sci. Ind. Res. 40(3-4), 331-336, 2005.

### **Book Chapter:**

1. A. Ahmad, M. Al-Mamun & M. Ismail, Iron-rich Complex Oxides and Perovskites Oxygen Carriers for CO<sub>2</sub> Capture and Hydrogen Generation, Published in book- Climate Change Mitigation and Adaptation (ISBN No.- 978-984-34-6705-8) as Proceeding of Climate Change Conference, 2019.

### **International Conferences and Meetings:**

Attended and presented talk and research finding in more the 30 conferences. Some are:

- 2019**
- a) Production, Characterization & Fuel Consumption Analysis of Waste Cooking Oil Biodiesel. ICIET Conference, December 23-24, 2019, Dhaka
  - b) Nucleate Boiling Regime Detection Using Digital Image Measurement Techniques. ICIET Conference, December 23-24, 2019, Dhaka
  - c) 'Study of the LFO Perovskites for CO<sub>2</sub> Capture via Chemical Looping Oxygen Uncoupling in Power Plants'- at 4<sup>th</sup> Young Scientist Conf. organized by Bangladesh Academy of Science, Dec. 13-15, 2019, Dhaka.
  - d) Clean H<sub>2</sub> Production & CO<sub>2</sub> Capture from Power Plants via Chemical Looping Combustion. BCSIR Congress, 12-14 December, 2019, Dhaka
  - e) Fuel property assessment of Shorea robusta seed and oil from physico-chemical properties and thermal analysis, ACS Spring 2019 National Meeting & Exposition, Orlando, Florida, USA; 29 March - 03<sup>rd</sup> April, 2019
  - f) Iron-rich Complex Oxides & Perovskites Oxygen Carriers for CO<sub>2</sub> Capture & H<sub>2</sub> Generation. Int. Conference on Climate Change- 2019, 1 – 3 March, 2019, Dhaka
- 2018**
- a) Integrated Production of Bio-fuel and Soap from Sal (*Shorea robusta*) Seed Oil. 2<sup>nd</sup> Int. Oil and Gas Conference, Dubai, UAE , December 3 -5, 2018
  - b) Development and Application of Graphene Oxide for the Removal of Textile Dyes. 8<sup>th</sup> International Science Conference, November 21- 23, 2018, India.
  - c) CFD of Chemical Looping Combustion for CO<sub>2</sub> Capture & H<sub>2</sub> Production from Fe-oxide Based Oxygen Carriers. Bangl. Chemical Cong., Oct 17-19, 2018, Dhaka
  - d) 'Production of Biodiesel and Soap from *Shorea robusta* Seed Oil'- at 3<sup>rd</sup> Young Scientist Conf. organized by Bangladesh Academy of Science, Sep. 13-15, Dhaka
  - e) 'Evaluation of Bio-fuel Production from Municipal Solid Waste and Rice Husk'- 18<sup>th</sup> National Renewable Energy Conf. & Green Expo-2018, January 13 -15, Dhaka.
  - f) 'Bio-oil Production from Municipal Solid Waste, Bagasse & Rice Husk'. 10<sup>th</sup> AFOB Regional Symposium 2018, January 26 -28, Dhaka
  - g) 'Bio-diesel Production from Sal (*Shorea robusta*) Seed Oil'. (Poster)- 10<sup>th</sup> AFOB Regional Symposium 2018, January 26 -28, Dhaka

- 2017** ‘Strategies, Constraints and Prospects of Renewable Energy Sector in Bangladesh’ at Workshop on Novel Storage Technologies for developing countries, China, 23 - 26<sup>th</sup> May, 2017.
- 2015:** a) ‘Enhanced Performance of Ca-Al-O Modified Fe<sub>2</sub>O<sub>3</sub> Oxygen carrier for CO<sub>2</sub> Capture & H<sub>2</sub> Production in CLC Formation’- 6<sup>th</sup> High Temperature Solid Looping Cycles Network Meeting, Milan, Italy, September 1 - 2, 2015
- b) ‘Application & Carbonation of Di-calcium ferrite for Chemical Looping Combustion & H<sub>2</sub> Production’ 1<sup>st</sup> Chemistry in Energy, Harriot Watt University, July 20 - 22, 2015
- c) ‘Effect of Sodium in Alumina Supported Iron Oxide Oxygen Carriers for Carbon Capture & H<sub>2</sub> Production’- 4<sup>th</sup> FETE conference, Duxford, UK, July 16, 2015
- d) ‘Alumina Supported Iron Oxide Oxygen Carriers for Carbon Capture & Hydrogen Production via Chemical Looping Combustion in Coal Fired Power Plants’- IDB Scholars 2<sup>nd</sup> Scientific Symposium, Imperial College, May 26, 2015.
- 2014** a) The performance of Fe<sub>2</sub>O<sub>3</sub>-CaO oxygen carriers and the interaction of iron oxides with CaO during chemical looping combustion and reforming’-12<sup>th</sup> Int. Conf. on Greenhouse Gas Technologies, USA, October 5-9, 2014.
- b) ‘Fe- Based Oxygen Carriers Containing Ca-Ferrites for Chemical Looping Production of H<sub>2</sub>’- 3<sup>rd</sup> Int. Conf. on Chemical Looping, Sweden, 9-11 September’14.
- 2013:** ‘Calcium Oxide Stabilized Fe-based Inexpensive O<sub>2</sub>-carrier for Carbon Capture by Chemical Looping Combustion’ - 3<sup>rd</sup> FETE conf., Duxford, UK, July 18, 2013.
- 2012** ‘Mixed Oxide Oxygen Carriers for Chemical Looping Combustion of Coal’- Cambridge University Combustion Group Meeting, June 8, 2012.
- 2010:** ‘Production of bio-fuel & reduction of environment pollution in Bangladesh’ at Afro-Asia Conclave of young Scientists. February 11-13, 2010, Bangalore, India.
- 2008:** ‘Bio-oil from Biodiesel Wastes & Other Biomass and its upgradation to Green Fuels’- Bi-monthly Scientific talk at BCSIR, February 14, 2008.
- 2007:** Synthesis and parametric studies of industrially important benzylated & *tert.* butylated aromatic petrochemical compounds’- Monthly Sci. Talk at TERI, India, September 17, 2007.

### **Other Attended Conferences:**

1. Nuclear Power: Clear or Unclear? – CUEN Annual Conference, Faculty of Law, University of Cambridge, June 26, 2012.
2. ‘Smart Cities and Smart Energies’- CUEN Annual Conference, Centre for Mathematical Sciences, University of Cambridge, June 18, 2013
3. 5<sup>th</sup> High Temperature Solid Looping Network Meeting, Queens College, University of Cambridge, UK, September 02 - 03, 2013
4. Cambridge International Development Conference: from crises to long term development, University of Cambridge, UK, December 07, 2013
5. UKCCSRC CATO-2 ECR Networking Meeting, Univ. of York. March 24 - 25, 2014.
6. Innovation Leaders Conference, University of Cambridge, UK, February 27 - 28, 2014

7. 'GAS - An (Un) Conventional Pathway Towards Our Energy Future'- CUEN Annual Conference Jesus College, University of Cambridge, June 09, 2014.
8. Catalysis@Cambridge Showcase and Networking, Wolfson College, University of Cambridge, April 14, 2015.
9. 1<sup>st</sup> and 2<sup>nd</sup> Innovation Leaders Conferences, University of Cambridge, 2014 (February 27 -28), 2015 (April 16 - 17).
10. Future Resource Abundance'- CUTECE 12<sup>th</sup> Technology Venture Conference, University of Cambridge, June 26, 2015.
11. Joliot Curie Conference 2015, Murray Edwards College, Cambridge, UK, September 16 - 17, 2015.

### **Invited Speaker, Chair and others:**

#### **Invited Speaker:**

5. Topic: Carbon Capture, Hydrogen & Biofuel Production Research at Dept. of Applied Chemistry & Chemical Engineering, University of Dhaka at Workshop on Strengthening Research Collaboration between BCSIR & Other Institutions in Bangladesh, July 10, 2019.
4. Topic: Towards Clean Technologies: CO<sub>2</sub> Capture, H<sub>2</sub> Production and Biofuel, Center of Excellence in Environmental Studies (CEES), King Abdulaziz University, KSA. April 10, 2019
3. Topic: 'Status of Biogas Technology in Bangladesh'- at Hydrocarbon Unit, Ministry of Power, Energy & Mineral Resources, GoB, Sep 25, 2018
2. Topic: Carbon Capture and Renewable Energy Research at University of Dhaka'- at Workshop on CCS and Renewable at ACCE, DU, July 19, 2018
1. Topic- 'Bio-fuel Potential in Bangladesh'- Applied Research on Energy & Power Workshop organized by EPRC, Dhaka, November 7, 2017

#### **Chair and Co-chair:**

3. Technical Session 3: Applied Chemistry and Chemical Engineering; ICIET Conference, December 23-24, 2019, Dhaka.
2. Technical Session-7C: Hydrogen Energy Economy Organized by Hydrogen energy Project, BCSIR Congress, 12-14 December, 2019, Dhaka
1. Technical Session-1 at 18<sup>th</sup> National Renewable Energy Conference and Green Expo-2018, January 13 -15, Dhaka.

### **Journal Reviewer**

Applied Catalysis-A: General, ACS Energy Materials, Journal of Thermodynamics & Catalysis, Bangladesh Journal of Scientific & Ind. Research & Dhaka University Journal of Applied Science & Engineering etc.

## **Computer skills**

CS ChemDraw, Adobe Photoshop, Sigmaplot, Image Analyzer, Computer Network, MS Word & Excel 97/2000/XP/vista/win7, Power Point, Access, Illustrator, many multimedia and research related soft wares, etc.

## **Languages skills**

- Fluent in English, Bengali, Hindi (speaking), Spanish (speaking), Arabic (Reading).

## **Professional Memberships:**

1. Member, Royal Society of Chemistry, Membership No.: 530687
2. Member, Society of Chemical Industry, Membership No.:71660
3. Member, American Chemical Society, Membership No.: 31055749
4. Sponsored Affiliate Member, IUPAC, Membership No.:
5. Member, The Institution of Engineering & Technology, Membership No.: 1100434379
6. Life Member, Bangladesh Chemical Society, Membership No.: LM-1443
7. Life Member, Cambridge University Engineering Society
8. Member, Asian Federation of Bio-technology
9. Life Member, National Young Academy of Bangladesh
10. Member, UK Carbon Capture Community Network

## **Awards, Scholarships and Fellowships**

**2019:** American Chemical Society (ACS) Travel Award

**2018, 2015:** Pillman Award, Girton College, University of Cambridge

Ford of Britain Trust Award, Dept. of Engineering, Univ. of Cambridge

Royal Society of Chemistry Travel Award

**2014:** Royal Society Award for Commonwealth Science Conference, India

**2012:** IDB-Cambridge International Scholarship- covered PhD tuition fees and living costs

**2007 & 2009:** TWAS, Italy Fellowship for Research & Advanced Training at TERI, India

**2006:** Prof. Mokarram Hossen Khondaker Memorial Fellowship from BCSIR

**2005:** Dean's Award, Faculty of Science, University of Dhaka.

## **Interests, Responsibilities and Activities:**

**2018 – till date:** Adviser, Student Chapter, Bangladesh, American Chemical Society

**2017- till date:** Education Cultural Secretary, Satkania –Lohagara Society, Dhaka

**2014 - 2015:** Vice- President, IDB Scholar Association, UK,

**2013:** Graduate Representative, Cambridge University Bangla Society

**2102:** Vice- President, Cambridge University Energy Network

Environment Officer, Girton College MCR, University of Cambridge

**2011 –till date:** Member, Chittagong Society, Dhaka,

Chairman, Career Design Foundation, Bangladesh

**2010:** Publicity Officer, Satkania –Lohagara Society, Dhaka

**2007-11:** Chief Coordinator, Ex- Student Association, Kalauzan High School, Chittagong.