MAINAK MAJUMDER

Home
2/3, Coolidge Court
North Dandenong
VIC-3175

Office
Room 211, Bldg.82
Monash University
Clayton, VIC-3800
Tel # +6139905 6255

E: mainak.majumder@monash.edu
W: http://users.monash.edu.au/~mainakm/

EMPLOYMENT HISTORY:

April 2015 – till date	Associate Professor, Mechanical and Aerospace Engineering, **Monash University**, Clayton, VIC, Australia Adjunct Associate Professor, Chemical Engineering, **Monash University**, Clayton, VIC, Australia
January 2012 - April 2015	Senior Lecturer, Mechanical and Aerospace Engineering **Monash University**, Clayton, VIC, Australia
March 2010 - December 2011	Lecturer, Mechanical and Aerospace Engineering **Monash University**, Clayton, VIC, Australia
August 2008 - January 2010	Post-Doctoral Research Associate Mechanical Engineering and Materials Science Richard Smalley Institute for Nanoscale Science and Technology **Rice University**, Houston, TX, USA
October 2007 - January 2010	Post-Doctoral Research Associate Chemical and Biomolecular Engineering Richard Smalley Institute for Nanoscale Science and Technology **Rice University**, Houston, TX, USA
August 2003 - September 2007	Graduate Research Assistant Department of Chemical and Materials Engineering, **University of Kentucky**, Lexington, KY, USA
February 2001 - August 2003	Staff Scientist **Central Glass and Ceramic Research Institute** (CGCRI)*; www.cgcri.res.in, Kolkata, India.

***CGCRI** is a National lab. of India within the Council of Scientific and Industrial Research (CSIR). CSIR labs are similar to the Max-Planck Institutes in Germany or Oak Ridge National Laboratory in the USA.

EDUCATION AND TRAINING:

2008 Postdoctoral Research Associate — ***Rice University***
Department of Chemical and Biomolecular Engineering
Department of Mechanical Engineering and Materials Science

Post-Doc Mentor(s): Professor Matteo Pasquali
Professor Pulickel M. Ajayan

2007 Ph.D. Materials Engineering, — ***University of Kentucky***
Chemical Engineering (Minor)

- Thesis Title: Molecular Transport Properties Through Carbon Nanotube Membrane
  Host department: Chemical and Materials Engineering
  Advisor: Professor Bruce J. Hinds

2001 MS, Ceramic Engineering **IIT-*Banaras Hindu University***

- Thesis Title: Synthesis and Characterization of Dense Cordierite Ceramics by a Semi-chemical Route for Electronic Packaging Application

  Advisor: Professor Devendra Kumar

1999 BS, Ceramic Engineering (first class with honors) ***Calcutta University***

GRANTS RECEIVED:

Majumder, "NANODOCKS - Liquid Phase Engineered Graphene-Oxide/Graphene Nanomaterials for Environmental Applications" New Staff Members Research Fund, Monash University, 2010-11, $20,000

Majumder, "Fish-Gill' Inspired Microvascular Fluidic Scaffolds", Monash University Engineering Small Grants, 2011-12, $30,000

Majumder, Corry, and Schaefer "Carbon Nanotube Fluidic Channels for Desalination – Interplay of Nanoscale Confinement and Electrostatics" ARC Discovery, 2011-14, $435,000

Majumder, Jagadeeshan, Singh, Pasquali, and Ajayan "Nanotechnology Enabled Electrochemical Energy Storage Materials from Indigenous Natural Graphite", ARC Linkage, 2011-13, $300,000

Majumder, Collier Trust Grant, 2011, $3000

Majumder, "Controlled Growth of Aligned Carbon Nanotubes for Nanofluidic Applications" New Staff Members Research Fund, Monash University, 2010-11, $12,500

Majumder, "Towards Wearable Energy Storage Technology From Graphene-Coated Fibers" Monash University Engineering Seed Grant, 2012-13, $30,000

Majumder, "Monash Researcher Accelerator Program", Monash University, 2013-14, $85,000

Neild, **Majumder**, Alan et al. "Micro-/Nano-fluidics Characterization Facility", ARC LIEF, $600,000 (ARC + partner university contributions)

Majumder, Wang, Liu, Bhattacharyya, Hill, Rechner, "Green Manufacturing of Graphene from Indigenous Natural Graphite and Graphene-based Nano-filtration Membranes" ARC Linkage, 2014-17, $375,000

Majumder and Tanksale, "Bench Scale Facility for Producing Graphene", Strategic Energy Resources, 2014-15, $280,000

Majumder, "Further development of SuperSands - novel materials that have the potential for commercial application", Ionic Industries, 2015, $40,000

Majumder, Neild, "Microsupercapacitor Prototype Development", Ionic Industries, 2016, $198,000

Losic, Skafidis, **Majumder** et al. "ARC Graphene Enabled Industrial Transformation Research Hub" (Total budget: 4.9M over 5 years, Monash University node – 1.5M over 5 years, node leader - Majumder)

Total external funding received $ 1.98 million: (a) ARC schemes as lead investigator: $2.6 million; (b) direct industry funding: $524, 000 (c) LIEF: $600,000

ADMINISTRATIVE POSITIONS:

Early Career Researcher Network Committee, Monash University, 2010 - 2012

Deputy Director of Research and Training, Mechanical and Aerospace Engineering, Monash University, 2011- till date

TEACHING:

MEC 4425: Micro/Nano Solid and Fluid Mechanics
Evaluations: 4.1 out of 5 (unit satisfaction), 4.3 out of 5 (teaching rating); Teaching period: 2012-14

MEC 3454: Thermodynamics and Heat Transfer
Evaluations: 4.2 out of 5 (unit satisfaction), 4.01 out of 5 (teaching rating); Teaching period: 2012-14

Official evaluations available upon request

SELECTED HONORS AND AWARDS:

2016

PhD student (Abozar Akbari) awarded best poster prize in International Conference in Inorganic Membranes (ICIM-6) – the only international conference dedicated to the science, engineering, and industrial use of inorganic membranes.

Appointed to the editorial board for *Current Opinion in Chemical Engineering* which is devoted to bringing forth short and focused review articles written by experts on current advances in different areas of chemical engineering.

PhD student (Rachel Tkacz) awarded the Bill Melbourne medal for the best PhD thesis from the Department of Mechanical & Aerospace Engineering, Monash University.

2015

Majumder and his team highlighted in the Australian Research Council's annual report for long-term academia-industry partnership.

Invited to Royal Society's Theo-Murphy International Scientific Meeting on nanostructured carbon membranes for breakthrough filtration applications as world leading expert.

Appointed non-executive director in Ionic Industries, an Australian public company, engaged in commercialization of graphene based technologies.

PhD student (Samuel Martin) awarded the Endeavor fellowship to study fluidics in 2D materials with Prof. Lyderic Bocquet at Ecole Normale Supérieure, Paris

2014
Awarded ARC Linkage grant as principal chief investigator for studies on graphene-based membranes

Industrial contract to investigate, improve cost drivers and address scalability challenges for graphene oxide production.

Majumder & his team's work on anti-corrosion films of graphene featured as a case study in the annual report of the Australian Research Council.

2013
Most read paper in Chemistry of Materials in Jan 2013 (Majumder et al, *Chem. Mater.*, 2012, 24 (24), 4647–4652)

2012
Selected into Monash Researcher Accelerator Program, which identifies the top 3% of B/C level academics over the university – a program aimed to support high achievers and future leaders at Monash University.

2011
Most read paper in ACS Applied Materials and Interfaces for 2011 (Gao et al. *ACS Appl. Mater. Interfaces*, 2011, 3 (6), 1821–1826)

2007
Annual Travel Award (North American Membrane Society, USA)

Best paper award (Indian Institute of Chemical Engineers, India)

2006
Student Travel Award (Gordon Research Conference, Membranes Materials and Processes, USA)

Dissertation year fellowship, university wide competition among top performing PhD students (University of Kentucky)

2004
Best poster presentation award (KY-Nanomat, KY, USA)

2001
Gold Medal (Institute of Technology- Banaras Hindu University, top student in masters degree)

PUBLISHED JOURNAL ARTICLES:

1. M.Shaibani, A. Akbari, P. Sheath, C.D. Easton, P.Chakraborty Banerjee, K. Konstas, A.Fakhfouri, M. Barghamadi, M. Musameh, A. S. Best, T. Rüther, P. J. Mahon, M. R Hill, A. F. Hollenkamp, M. Majumder, "Suppressed Polysulfide Crossover in Li–S Batteries through a High-Flux Graphene Oxide Membrane Supported on a Sulfur Cathode", *ACS Nano*, 2016, 10 (8), 7768–7779.

2. M.B. Coskun, A. Akbari, D. TH Lai, A. Neild, M. Majumder, T.Alan, "Ultrasensitive Strain Sensor Produced by Direct Patterning of LiquidCrystals of Graphene Oxide on a Flexible Substrate", *ACS Appl. Mater. Interfaces*, 2016, 8 (34), 22501–22505

3. Akbari, P. Sheath, S. T Martin, D.B Shinde, M. Shaibani, P. Chakraborty Banerjee, R. Tkacz, D. Bhattacharyya, M. Majumder, "Large-area graphene-based nanofiltration membranes by shear alignment of discotic nematic liquid crystals of graphene oxide", ***Nature Communications***, 2016, 7

4. P.Pachfule, D.B. Shinde, M.Majumder, Q.Xu, "Fabrication of carbon nanorods and graphene nanoribbons from a metal organic framework", Nature Chemistry, ***Nature Chemistry***, 8, 718–724, (2016)

5. D.B. Shinde, J.Brenker, C.D. Easton, R.F. Tabor, A.Neild, M.Majumder, "Shear-assisted electrochemical exfoliation of graphite to graphene", *Langmuir*, 2016, 32 (14), 3552–3559

6. P.Sheath, M.Majumder, “Flux accentuation and improved rejection in graphene-based filtration membranes produced by capillary-force-assisted self-assembly”, Phil.Trans.R.Soc. A 374(2060)20150028

7. S.J.Chen, W.Wang, K Sagoe-Crentsil,F.Collins,X.L.Zhao, M.Majumder, W.H. Duan, “Distribution of carbon nanotubes in fresh ordinary Portland cement pastes: understanding from a two-phase perspective”, RSC Advances 6(7), 5745-5753

8. R. Khare, D.B. Shinde, S.Bansode, M.A. More, M.Majumder, V.K. Pillai, D.J. Late, "Graphene nanoribbons as prospective field emitter" *Appl. Phys. Lett. 106, 023111, 2015*

9. P. Chakraborty-Banerje, D.E.Lobo, R.Middag, W.K.Ng, M.Majumder, “Electrochemical Capacitance of Ni-doped MOF-5 and reduced graphene oxide composites: More than the sum of its parts”, *ACS Appl. Mater. Interfaces*, 2015, 7 (6), 3655–3664

10. A.Thornton, A.Ahmed, S. K. Kannam, B. D. Todd, M. Majumder and A. J .Hill, “Unified gas transport model combining specular, Knudsen and surface diffusion mechanisms”,J.Memb.Sci., 485,1-9, 2015

11. L.F. Dumee, L.He, Z.Wang, P.Sheath, J. Xiong, C.Feng, M.Y. Tan, F.She, M.Duke, S. Gray, A.Pacheco, P.Hodgson, M.Majumder, L. Kong, "Growth of nano-textured graphene coatings across highly porous stainless steel supports towards corrosion resistant coatings" Carbon, 87, 395-408, 2015

12. M.Miansari, J.R.Friend. P.Chakraborty-Banerjee, M.Majumder, L.Y.Yeo, "Graphene-based planar nanofluidic rectifier", *J. Phys. Chem. C*, 2014, 118 (38), 21856–21865

13. S.Martin, A.Neild, M.Majumder,"Graphene-based ion rectifier using macroscale geometric asymmetry", APL Mat. 2, 092803, 2014 - Special Topic in 2D Materials

14. S.J. Chen, B.Zou, F.Collins, X.L. Zhao, M.Majumder, W.H.Duan, "Predicting the influence of ultrasonication energy on the reinforcing efficiency of carbon nanotubes", Carbon, 2014, 77, 1–10

15. R.Tkacz, R.Oldenbourg, S.B. Mehta, A. Verma, M.Miansari, M.Majumder, "pH Dependent Isotropic to Nematic Phase Transitions in Graphene Oxide Dispersions Reveal Droplet Liquid Crystalline Phases", *Chem.Commun,* 2014,50, 6668-6671

16. D.B. Shinde, M.Majumder, V.K. Pillai, "Counter-Ion Dependent Longitudinal Unzipping of Multi-Walled Carbon Nanotubes to Highly Conductive and Transparent Carbon Nanoribbons", ***Nature Scientific Reports 4****, Article # 4363*

17. R.Tkacz, R.Oldenbourg, A.Fulcher, M.Miansari, M.Majumder, "Capillary-Force Assisted Self-Assembly (CAS) of highly Ordered and Anisotropic Graphene-Based Thin Films", *J.Phys.Chem.C,* 2014*, 118 (1), 259–267*

18. A.W.K. Ma, J.Nam, N.Behabtu, F.Mirri, C.C. Young, B.Dan, D. Tsentalovich, M.Majumder, L.Song, Y.Cohen, P.M. Ajayan, M.Pasquali, "Scalable Formation of Carbon Nanotube Films Containing Highly Aligned Whiskerlike Crystallites", *Ind. Eng. Chem. Res.*, 2013, 52 (26), 8705–8713

19. D. E. Lobo, J.Fu, T.Gengenbach, M. Majumder, "Localized Deoxygenation and Direct Patterning of Graphene Oxide by Focused Ion Beams” *Langmuir,* 2012, 28, 41,14815–14821

20. M. Majumder, C.S. Rendall, J. A. Eukel, J. Y.L Wang, N. Behabtu, C. Pint, T.Y. Liu, A. W Orbaek, F. Mirri, J.Nam, A. R Barron, R.H. Hauge, H. K. Schmidt, and M. Pasquali, "Overcoming the 'Coffee-Stain Effect by Compositional Marangoni Flow Assisted Drop-Drying", *J. Phys. Chem.B*, 2012, 116, 22, 6536–6542

21. R.K. Singh Raman, P. Chakraborty Banerjee, Derrek E. Lobo, H.Gullapalli, M.Sumandasa, A.Kumar, L. Choudhary, R.Tkacz, P.M. Ajayan, M.Majumder, "Protecting Copper from Electrochemical Degradation by Graphene Coating " *Carbon*, 2012, 50, 11, 4040–4045

22. J.Wu, K.Gerstandt, M.Majumder, B.J. Hinds, “Highly Efficient Electro-osmotic Flow through Functionalized Carbon Nanotube Membrane”, *RSC Nanoscale,* 2011, 3, 3321-3328

23. W.Gao, M. Majumder*, L. Alemany, T. Narayanan, M. Ibarra, B.K. Pradhan, P.M. Ajayan, "Engineered Graphite Oxide Materials for Application in Water Purification" *ACS Applied Materials and Interfaces*, 2011,3, 6,1821–1826

24. M.Majumder and B.Corry, "Anomalous Decline of Water Transport in Covalently Modified Carbon Nanotube Membranes", *Chem.Commun*, 2011, 47, 7683-85

25. M. Majumder, N.Chopra, B.J. Hinds, "Mass Transport through Carbon Nanotube Membranes in Three Different Regimes: Ionic Diffusion and Gas and Liquid Flow" *ACS Nano,* 2011, 5, 3867-78

26. M.J. Green, C.C. Young, A.N.G. Parra-Vasquez, M.Majumder, V.Juloori, N. Behabtu, C. L. Pint, J. Schmidt, E.Kesselman, R.H. Hauge, Y.Cohen, Y.Talmon and M.Pasquali, "Direct imaging of carbon nanotubes spontaneously filled with solvent", *Chem.Commun.,* 2011, 47,4,1228 – 1230.

27. M. Majumder, C. Rendall, M. Li, A. Eukel, H.K. Schmidt, M. Pasquali, "Insight into the physics of spray-coating of SWNT films" *Chem. Eng. Sci.*, 2010, 65, 6,2000-08

28. M.Majumder, A. Stinchcomb, B.J. Hinds, "Towards Mimicking Natural Protein Channels with Aligned Carbon Nanotube Membranes for Active Drug Delivery" *Life Sciences,* 2010, 86, 15-16, 2010, 563-68

29. M. Majumder, K. Keis, J. Cole, C. Meadows, X. Zhan, B.J. Hinds, "Enhanced Electrostatic Modulation of Transport Through CNT Membrane by Diazonium Grafting Chemistry" J. Memb. Sci., 2008, 316, 1-2, 89-96.

30. M. Majumder, X. Zhan, R. Andrews, B.J. Hinds "Voltage Gated Carbon Nanotube Membranes", *Langmuir*, 2007, 23, 8624-8631.

31. M. Majumder, N. Chopra, R. Andrews, B.J. Hinds, "Nanoscale Hydrodynamics: Enhanced Flow in Carbon Nanotubes", ***Nature*****,** 2005, 438, 3, 44.

32. M. Majumder, N. Chopra, B.J. Hinds, "Effect of Tip Functionalization on Transport through Vertically Oriented Carbon Nanotube Membranes", *J. Am. Chem. Soc.,* 2005,127, 9062-70.

33. N. Chopra, M. Majumder, B.J. Hinds, "Bi-functional Carbon Nanotubes by Sidewall Protection", *Adv. Funct. Mat., 2005,* 15, 858-64.

34. M. Majumder, S. Mukhopadhyay, O.Parkash, D.Kumar, "Sintering and Crystallization Behavior of Chemically Prepared Cordierite for Application in Electronic Packaging", *Ceram. Inter.*, 2004, 30, 1067-1070.

35. S. Mukhopadhyay, S. Dutta, M. Majumder, A. Kundu and S.K. Das, "Synthesis and Characterization of Alumina Bearing Sol for Application in Refractory Castables", *Industrial Ceramics*, 2000, 20, 2, 88-92.

Google Scholar data (accessed: 12 October, 2016)

Citation indices	**All**	**Since 2011**
Citations	**2357**	**1803**
h-index	**17**	**17**
i10-index	**24**	**24**

BOOK CHAPTER:

1. **M. Majumder** and P.M. Ajayan, "Carbon Nanotube Membranes: A new frontier in membrane science" in: Enrico Drioli and Lidietta Giorno Comprehensive Membrane Science and Engineering (Elsevier Science), 2010, 1, 291–310

2. Abozar Akbari, **M. Majumder**, and Mahsa Tehrani, "Polylactic acid (PLA) Carbon Nanotube Nanocomposites" in: K.K. Kar, S.Rana, J.K. Pandey, Technological advancement in the carbon nanotube (CNT) based polymer composites: Processing, performance and application (Springer), 2012 (accepted for publication).

3. Mahsa A.Tehrani, Abozar Akbari**,** and **M. Majumder** in: K.K. Kar, S.Rana, J.K. Pandey, "Polylactic acid (PLA) Layered Silicate" in: K.K. Kar, S.Rana, J.K. Pandey, Technological advancement in the carbon nanotube (CNT) based polymer composites: Processing, performance and application (Springer), 2012 (accepted for publication).

4. Ehsan Zeimaran, Abozar Akbari, **Mainak Majumder "**Polystyrene Carbon Nanotube Nanocomposites" in**:** K.K. Kar, S.Rana, J.K. Pandey, Technological advancement in the carbon nanotube (CNT) based polymer composites: Processing, performance and application (Springer), 2012 (accepted for publication).

PUBLISHED CONFERENCE PROCEEDINGS:

1. P. Kumar, P. S. Gandhi, **M. Majumder**, "Design and fabrication of thin microvascularised polymer matrices inspired from secondary lamellae of fish gills", *Proc. SPIE* 9797, Bioinspiration, Biomimetics, and Bioreplication 2016, 979713 (April 15, 2016); doi:10.1117/12.2221892

2. A.Tiwari, P.Chakraborty-Banerjee, R.K.S Raman, **M.Majumder**, "CVD Graphene for Remarkable Resistance to Corrosion Resistance", Australian Corrosion Association, November 2012, Melbourne, Australia

3. S. J. Chen, W. H. Duan, F. Collins & X. L. Zhao, **M. Majumder,** "Effects of geometry packing upon the aggregation morphology of sodium cholate on the surface of carbon nanotubes" ACUN6 – Composites and Nanocomposites in Civil, Offshore and Mining Infrastructure, November 2012, Melbourne, Australia

4. **M.Majumder,** Pasquali, 2012, "Harnessing Compositional Marangoni Flow in Depositing Nanoparticle Films", Proceedings of the Annual Meeting of the American Physical Society, Division of Fluid Dynamics, November 2012, San Diego, CA.

5. P. Sheath, **M. Majumder**, 2011, A comparative review of graphene oxide and titanium dioxide as photocatalysts, *Chemeca 2011 Engineering a Better World*, 18 to 21 September, **2011**, Engineers Australia, Canberra Australia, 1-10.

6. **M. Majumder**, N. Chopra, B.J. Hinds, "Gated Chemical Transport and Enhanced Flow Through Carbon Nanotube Membranes" **2006,** *Nanotech*,1, 106-09

7. S. Bandyopadhyay, **M.Majumder**, H.S. Maiti, "Field Trial Studies for Arsenic Removal from Highly Contaminated Ground Water using Ceramic Membrane Modules", *Proceedings of National Seminar on Desalination and Membrane Technology:* Present and Future, 2003,Bhavnagar, India.

8. M**.Majumder** and B.J. Hinds "Mass Transport Through Carbon Nanotube Membrane", Special session on Nanotechnology at the *Annual Meeting of Indian Institute of Chemical Engineers*, 2007, Kolkata, India.; ***Won best paper (2nd place) award***

INVITED TALKS:

1. "Graphene-based Membranes: Scalable Manufacturing and Targeted Product Development", 9th International Membrane Science and Technology Conference, 5–8 December,2016, Brisbane, Australia.

2. "Expanding the Application Space of Graphene-based Materials", 14 July, 2016, Department of Chemical & Materials Engineering, University of Kentucky, Lexington, KY, USA

3. "Large-area graphene based membranes by shear alignment of discotic nematic liquid crystals of graphene oxide", International Conference in Inorganic Membranes, 10-13 July, 2016, Georgia Tech Global Learning Center, Atlanta, GA, USA (**keynote lecture**)

4. "Will miniaturization improve the energy and power density of micro-supercapacitors?", Recent Progress in Graphene Research, October 25-29, 2015, Lorne, Australia

5. "Expanding the Application Space of Graphene-based Materials" Colloquium at the Department of Chemical Engineering, Imperial College, April 29, London, UK

6. "Graphene-based fluidic systems: from compact micro-/nano-fluidic systems to large area filtration membranes," Theo-Murphy International Scientific Meeting (Royal Society) on Nanostructured carbon membranes for breakthrough filtration applications: advancing the science, engineering and design, April 27-28, 2015, London, UK

7. "Miniaturization of micro-super-capacitors increases energy and power density", Central Electrochemical Research Institute (CECRI), November 12, 2014, Karaikudi, India.

8. "Graphene at the micro-/nano-interface" Graphene Research Center, National University of Singapore and Monash University joint workshop September29-30, 2014, Singapore

9. "Unusual Molecular Transport Properties of Carbon Nanotubes", Annual Meeting of the Australian Institute of Physics, 2012, December 9-13, Sydney, Australia.

10. "Expanding the Application Space of Expanding the Application Space of Graphene-Based Materials", Texas Tech University, Department of Chemical Engineering Seminar, November 9 , 2012, Lubbock, TX, USA.

11. "Expanding the Application Space of Graphene-Based Materials", NT-12, June 24-29th, 2012, Brisbane, Australia.

12. "Engineering with Nanocarbons", Victoria University, Institute of Sustainability and Innovation, Victoria University, 17th March, 2012, Melbourne, Australia.

13. "Supersand: Creating Water Security Through Nanomaterials" 14th December, 2011, Society for International Development, Ottawa, Canada (video lecture)

14. "Engineering with Nanocarbons, PACRIM-9, 10th-14th July, 2011, Cairns, Australia.

15. "Fluid Flow Through Carbon Nanotubes: Prospects and Challenges", 4th November, 2010, CSIRO Materials Science and Engineering, Belmont, Geelong, Australia.

16. "Fluid Flow Through Carbon Nanotubes: Prospects and Challenges", 7th October, 2010, Swinburne University, Melbourne, USA.

17. "Environmental Nanotechnologies", Oct.1, 2009, Conoco-Philips R&D Center, Bartlesville, OK, USA.

18. "Mass Transport Through CNT Membranes: Enhanced Flow and Voltage-Gating Effects", April 6, 2007, Carbon Nanotechnology Laboratory, Rice University, TX, USA.

19. "Nano-Scale Transport Phenomena in the Ionic, Solvent and Gaseous Regimes through Carbon Nanotube Membranes", Annual Meeting of AIChE, 2006, San Francisco, CA.

20."Synthesis and Applications of Carbon Nanotube Membranes", Central Glass and Ceramic Research Institute, 2006, Kolkata, India.

PATENTS AND INVENTION DISCLOSURES:

1. DB Shinde, J.Brenker, R.F. Tabor, A.Neild, **M.Majumder**, "Shear-assisted electrochemical exfoliation of graphite to graphene and devices thereof" (filed March 24, 2016, 62/313025)

2. M.Majumder, A. Akbarivakilbadi, "A method for producing graphene and graphene oxide membranes", 21 Nov, 2014 (PCT/AU2015/00698)

3. M. Majumder, D.E. Lobo, J. Fu, "Conductive Portions in Insulating Materials", Australian provisional patent 2012902606, 21st July 2012 (National Phase Patent Application, paid for by Strategic Energy Resources)

4. M.Majumder, W.Gao, P.M. Ajayan, T.N. Narayanan, B.K. Pradhan, "Graphite-oxide coated particulate material and uses thereof", WO 2012128747, 9th September 2012

5. A.W.K. Ma, N.Behabtu, **M.Majumder,** J.Nam, F.Mirri, M.Pasquali, "Carbon Nanotube Films Processed From Strong Acid Solutions And Methods For Production Thereof", Reference Tech ID 2012-016

IN MEDIA AND PRESS

1. November 10, 2005 - Slippery when wet (on enhanced water flow through carbon nanotube**)**

http://www.nsf.gov/news/news_summ.jsp?cntn_id=104627

http://en.wikipedia.org/wiki/Potential_applications_of_carbon_nanotubes

http://www.chemeurope.com/en/encyclopedia/Nanotube_membrane.html

http://www.sciencedaily.com/releases/2005/11/051104085644.htm

2. June 24, 2011 - Super-sand for water purification (on graphite-oxide coated sand)

http://www.bbc.co.uk/news/business-13895077

http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_ARTICLEMAIN&node_id=223&content_id=CNBP_027526&use_sec=true&sec_url_var=region1&__uuid=e901d732-d3bd-407e-9705-72e881fa435e

http://www.sciencedaily.com/releases/2011/06/110622102831.htm

http://www.cosmosmagazine.com/news/4504/super-sand-could-improve-water-filtration

http://www.sterlitech.com/blog/2011/07/11/super-sand/

http://www.filtsep.com/view/19207/super-sand-filters-five-times-better/

http://www.theage.com.au/national/education/bridge-over-troubled-waters-20110808-1iiyi.html

3. September 23, 2012- Invisible barrier wards off corrosion (on dramatic anti-corrosion properties of graphene)

http://www.monash.edu.au/news/show/invisible-barrier-wards-off-metal-corrosion

http://www.zdnet.com/graphene-switches-to-new-role-as-anti-corrosion-coating-7000004951/

http://proedgewire.com/graphite-graphene-intel/graphene-a-magic-material-v-corrosion/

http://www.eurekamagazine.co.uk/design-engineering-news/graphene-based-coating-helps-prevent-metal-corrosion/45541/

4. January 4, 2013 – Washable MOFs (on the aqueous molecular sieving properties of MOFs)

Highlight in science magazine: http://www.sciencemag.org/content/339/6115/12.3.short!

http://www.monash.edu.au/news/show/nanosponge-filters-out-herbicide-poisons

5. August 4, 2014 - Surprise discovery could see graphene used to improve health (on discovery of a droplet liquid crystalline phase)

Monash News: http://monash.edu.au/news/show/surprise-discovery-could-see-graphene-used-in-disease-detection-and-drug-delivery

Science daily: http://www.sciencedaily.com/releases/2014/08/140805132007.htm

Electronic News: http://www.electronicsnews.com.au/news/medical-applications-for-liquid-crystal-form-of-graphene

6. October 23, 2014 – SER and Monash to scale up Graphene manufacturing (on securing industry funding for upscaling graphite-derived graphene production)

Electronic News: http://www.electronicsnews.com.au/news/ser-and-monash-university-to-scale-up-graphene-man

Ferret: http://www.ferret.com.au/articles/news/ser-and-monash-university-to-scale-up-graphene-manufacturing-n2518410

7. July 29, 2015. – Early proof-of-concept demonstration of high energy density microsupercapacitors

Australian: http://monashsciencenews.blogspot.com.au/2015/10/article-in-australian-monash-punches.html

Monash News: http://www.monash.edu/news/articles/9098

Australian Business Review: http://www.theaustralian.com.au/business/mining-energy/monash-makes-battery-breakthrough/news-story/860f1b3053b77e1acfcacbe02897c348

8. March 10, 2016 – Development of scalable roll-to-roll process for manufacturing graphene-based membranes

Monash News: http://www.monash.edu/news/articles/revolutionary-graphene-filter-could-solve-water-crisis

Mashable: http://mashable.com/2016/03/10/graphene-water-filter/#i3r1cz.bzGqT

SUPERVISION AND MENTORING EXPERIENCE:

Postdoctoral Researchers

Dr. Sivakumar Balakrishnan (November 2011- February 2012) (100% supervision)

Dr. Parama Banerjee-Chakraborty (December 2011- till date) (100% supervision)

Dr. Dhanraj Shinde (December 2013 – October 2016) (100% supervision) – currently in a postdoc position in New Mexico State University, USA.

Dr. Derrek Lobo (December 2015- November 2016) (100% supervision)

Post-Graduate Students

Chinmay Sonawane (2016 – till date), PhD candidate, Monash University (70% supervision)

Sally El Mergawi (2016 – till date), PhD candidate, Monash University (50% supervision)

Joynul Abedin (2016- till date), PhD candidate, Monash University (70% supervision)

Samuel Martin (2013- till date), PhD candidate, Monash University (50% supervision)

Mahdokht Shaibani (2013 – till date), PhD candidate, Monash University (60% supervision)

Abozar Akbari (2013- till date), PhD candidate, Monash University (80% supervision)

Tanesh Gamot (2012- till date), PhD candidate, IITB-Monash Research Academy (25% supervision)

Prasoon Kumar (2011-) PhD candidate, IITB-Monash Research Academy (50% supervision)

Shu Jian Chen (20xx- 20xx), PhD, Monash University

Morteza Miansari (2011–2013), PhD, Monash University (60% supervision) – currently postdoc at Stanford University.

Rachel Tkacz (2011-2015), PhD, Monash University (60% Supervision) – currently research manager at Rafael, Israel.

Phillip Sheath (2010-2016), PhD, Monash University (80% supervision) – currently at DIISR, Canberra.

Derrek Lobo (2010-2016) PhD, Monash University (100% supervision) – currently research scientist at Agilent Technologies

Wei Gao (Chemistry, 2009 – 2010*)*, supervised research at Rice University as a postdoc - currently assistant professor at North Carolina State University, USA

.PROFESSIONAL ACTIVITIES AND SERVICES:

Reviewer for: *Journal of Membrane Science, Small, Physics of Fluids, Open Journal of Applied Physics, Environmental Science and Technology, Journal of Physical Chemistry, Biomicrofluidics, ACS Nano, ACS Applied Materials and Interfaces, Journal of the American Chemical Society*

Co-Convener: Symposia on Metrology and Methodology,13th International Conference on the Science and Application of Nanotubes (NT-12) June 24-29, 2012, Brisbane, 2012.

Session chair on Carbon based nanostructured Membranes (AIChE Annual Meetings, 2013-16)

Organizing Committee: Advanced Membrane Technology VI: Water, Energy, and New Frontiers, February 8 -13, 2015, Sicily, Italy.

Symposium Organizer (Co-chair): Emerging Membrane Materials for Sustainable Separations, Materials Research Society Spring Meeting, April 17-21, Phoenix, AZ, USA.

Scientific Advisory Committee: Separations Technology IX: New Frontiers in Media, Techniques and Technologies, March 5-10, Albufeira, Portugal.

REFERENCES:

Prof. Pulickel M. Ajayan, Department of Mechanical Engineering and Materials Science, Rice University, 6100 Main, MS-321, Houston, Texas 77005-1892, Email: ajayan@rice.edu

Prof. Matteo Pasquali, Department of Chemical and Biomolecular Engineering, Rice University, MS 369, Houston, Texas 77251-1892, Email: mp@rice.edu

Prof. Dibakar Bhattacharyya, Department of Chemical and Materials Engineering, University of Kentucky, 169 FPAT, Lexington, KY 40506-0046, Email: db@uky.edu