

## Dr. M. Ariraman, PhD

Post-doctoral Research Fellow - Laboratory of Polymer Science  
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*“There would be one dream for an young man in a nation that has set goals to thrive in research!!”*

### **Professional summary**

- (1) **Department of Chemical Engineering - National Chung Hsing University - Taichung, Taiwan [2016 –Present] -**
  - Derivation of Phosphorus based flame retardant curative agents from polymer modified polymers of active esters (for epoxy curing purpose)
  - Synthesis of low dielectric materials from commercial and bio renewable resources.
  - Synthesis of benzoxazine, epoxy, polyimide and cyanate ester monomers from bio renewable resources.
- (2) **Department of chemical synthesis – Anabond R&D center – Chennai, India [2015-2016] –**
  - Synthesis of Bisphenol-F and the separation of isomers *via* the solvent crystallization method.
  - Synthesis of low temperature curing benzoxazine
- (3) **Department of quality control – ISMAT corporation – Chennai, India [2011-2012] –**
  - Inspecting the quality of rubber raw materials.
  - Testing the cured rubber products
  - Lab in-change

### **Educational qualifications**

- **PhD in polymer chemistry (2013-2015)** – Department of Chemical Engineering – Anna University, Chennai, India.  
 Thesis title – *“Synthesis and Characterization of Skeletally Modified Cyanate Ester Based Organic-Inorganic Hybrid Materials for High Performance Applications”*
- **Master of Philosophy (M.Phil) (2011-2012)** - Department of physical chemistry- University of Madras, Chennai, India.  
 Thesis title – *“Magnetic nanocomposites derived from core-shell Fe<sub>3</sub>O<sub>4</sub>/polymer grafted with PAMAM and PPI dendrimer for DNA cleavage studies”*
- **Master of science (M.Sc) (2008-2010)** – Department of polymer science – University of Madras, Chennai, India.
- **Bachelor of science (B.Sc) (2005-2008)** – University of Madras, Chennai, India.

### **Technical expertise**

- Thin Layer Chromatography (TLC)
- Column Chromatography
- UV-Visible and UV-DRS
- Gel Permeation Chromatography (GPC)
- Thermogravimetric analysis (TGA)
- Thermomechanical Analysis (TMA)
- Dynamic mechanical analysis (DMA)

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- Differential Scanning Calorimetry (DSC)
- Tensile strength
- Conduct angle
- FT-IR Spectrophotometer

**Instrumentation skills:** UV-Perkin Elmer (Lambda 25); TGA-Perkin Elmer; TMA-(SII EXSTAR 6000); DMA- Perkin Elmer; DSC- Perkin Elmer (DSC 8000); Tensile Shimadzu (EZ-SX); Density Functional Theory Calculations (DFT) - Gaussian 09 package (software); FT-IR (Perkin Elmer – spectrum two)

### **Areas of research interest:**

- Synthesis of macromolecules from the bio renewable resource
- Mesoporous silica
- polyoctahedral silsesquioxanes (POSS)
- Flame retardant polymers
- Carbon based catalyst (Pt, Rh, Ru and Pd)
- Covalent organic frame (COF)

### **Industrial Training**

- One-month implant training in CIPET Guindy, Chennai.

### **Software Skills**

PGDCA; Chem Draw; Origin Pro; Gaussian 09 package; ImageJ; Scifinder & Reaxys; EndNote

### **Research publications (in the reverse chronological order) - 15**

1. C. H. Chen, T. Y. Yu, J. H. Wu, W. F. Shiao, **M. Ariraman**, T. Y. Juang, M. M. Abu-Omar, C. H. Lin. (2019). “Synthesis and properties of quinoxaline-containing benzoxazines and polybenzoxazines”. *ACS Omega*, Vol. 4, pp. 9092-9101. (IF -2.584)
2. S. P. Suresh, G. S. Lekshmi, S. D. Kirupha, **M. Ariraman**, O. Bazaka, I. Levchenko, K. Bazaka, M. Mohandas (2019). “Superhydrophobic fluorine-modified cerium-doped mesoporous carbon as an efficient catalytic platform for photo-degradation of organic pollutants”. *Carbon*, Vol. 147, pp. 323-333. (IF -7.466)
3. E. Murugan, J. Nimita Jebaranjitham, **M. Ariraman**, R. Saravanan, K. Janankiraman, C. R. Akshata, K. Kalpana. (2018). “Core-Shell Nanostructured Fe<sub>3</sub>O<sub>4</sub> - Poly (styrene - co - vinylbenzyl chloride) Grafted PPI Dendrimers Stabilized with AuNPs/PdNPs for Efficient Nuclease Activity”. *ACS Omega*, Vol. 3, pp.13685-13693. (IF -2.584)
4. C. H. Chen, W. F. Shiao, **M. Ariraman**, C. H. Lin, T. Y. Juang. (2018). “High-performance thermosets derived from acetovanillone-based reactive polyethers”. *Polymer*, Vol. 151, pp. 307-315. (IF -3.771)
5. C. H. Chen, C. H. Liu, **M. Ariraman**, C. H. Lin, T. Y. Juang. (2018). “Phosphinated Poly (aryl ether) s with Acetic/Phenyl Methacrylic/Vinylbenzyl Ether Moieties for High-Tg and Low-Dielectric Thermosets”. *ACS Omega*, Vol.3, pp.6031-6038. (IF -2.584)
6. M. Alagar, K. Vijayashree, M. Shankar, M.A. Abilash, **M. Ariraman**, R. Sasikumar. (2016). “Copolymer of Allyl Terminated GO/ Methyl Methacrylate (MMA) Nanocomposites for Low k Application”. *Adv. Cen. Sci. Vol.1*, pp. 18-22.
7. S. Kurincheselvan, R. Sasikumar, **M. Ariraman**, P. Gomathipriya, M. Alagar. (2016). “Low

- dielectric behavior of amine functionalized MCM-41 reinforced polyimide nanocomposites”. *High Performance Polymers*, Vol. 28, pp. 842 - 853. (IF -1.584)
8. **M. Ariraman**, R. Sasikumar, M. Alagar. (2016). “Cyanate Ester Tethered POSS/BACY Nanocomposites for Low-k Dielectrics”. *Polymers for Advanced Technologies*, vol. 27, pp. 597-605. (IF -2.162)
  9. R. Sasikumar, **M. Ariraman**, M. Alagar. (2015). “Studies on MCM-41/ PDMS based hybrid polybenzoxazine nanocomposites for interlayer low k dielectrics”. *RSC Advances*, vol. 5, pp. 40798-40806. (IF - 3.049)
  10. R. Sasikumar, **M. Ariraman**, M. Alagar. (2015). “Studies on dielectric properties of GO reinforced bisphenol-Z polybenzoxazine hybrids”. *RSC Advances*, vol. 5, pp. 23787-23797. (IF - 3.049)
  11. **M. Ariraman**, R. Sasikumar, M, Alagar. (2015). “Shape memory effect on the formation of oxazoline and triazine rings of BCC/DGEBA copolymer” *RSC Advances*, vol. 5, pp. 69720-69727. (IF - 3.049)
  12. **M. Ariraman**, R. Sasikumar, M, Alagar. (2015). “Hybridization of PDMS based cyanate ester and DGEBA for radiation resistant and microelectronics applications”. *RSC Advances*, vol. 5, pp. 63641-63649. (IF - 3.049)
  13. R. Sasikumar, **M. Ariraman**, M. Alagar. (2014). “Design of lamellar structured POSS/BPZ polybenzoxazine nanocomposites as a novel class of ultralow-k dielectric materials”. *RSC Advances*, vol. 4, pp. 19127-19136. (IF - 3.049)
  14. **M. Ariraman**, R. Sasikumar, M, Alagar. (2014). “Studies on FMCM-41 reinforced cyanate ester nanocomposites for low k applications”. *RSC Advances*, vol. 4, pp. 57759-57767. (IF - 3.049)
  15. **M. Ariraman**, R. Sasikumar, M, Alagar. (2014). “Design of Cyanate Ester/Azomethine/ZrO<sub>2</sub> Nanocomposites High-k Dielectric Materials by Single Step Sol–Gel Approach”. *Journal of Applied Polymer Science*, vol. 131, pp. 41097 (1-10). (IF -2.188)

### **Patent filed**

**Application No/ 5861/CHE/2015** - M. Alagar, R. Sasikumar, **M. Ariraman**, & K. Adhinarayanan (2015) “Process for Simultaneous Production of Bis(Hydroxyphenyl)Methanes and Separation of 4,4’-Bis(Hydroxyphenyl)Methane” Indian patent

### **Conference presentations**

1. **M. Ariraman**, C.H. Lin. 2018. ‘Synthesis and modification of phosphinated poly(aryl ether)s with acetic/phenyl methacrylic/vinylbenzyl ether moieties with high-Tg and low-dielectric thermosets for high-frequency communication application’. *International Conference on Advances in New Materials (ICAN-2018)*. University of Madras, Chennai, India. (**Invited talk**).
2. **M. Ariraman**, R. Sasikumar, M, Alagar. 2015. ‘An investigation on low k properties of MCM-41 reinforced cyanate ester nanocomposites for electronic applications’. *Advanced Polymeric Materials (APM 2015)*. IISc, Bangalore, India.
3. **M. Ariraman**, R. Sasikumar, M, Alagar. 2014. ‘Preparation of nitrogen doped graphene-metal oxide composites for supercapacitor’. *International Conference on Advances in New Materials (ICAN-2014)*. University of Madras, Chennai, India.
4. R. Sasikumar, **M. Ariraman**, M. Alagar. 2014. ‘Investigation on low dielectric properties of lamellae structured polybenzoxazine hybrids for electronic applications’, Third International Conference on Polymer Processing and Characterization (ICPPC-2014), Mahatma Gandhi

University, Kottayam, Kerala, India (**Invited talk**).

5. R. Sasikumar, **M. Ariraman**, M. Alagar. **2014**. ‘Synthesis of BPZ/GO polybenzoxazine nanocomposites for low-k dielectrics’. *International Conference on Advances in New Materials (ICAN-2014)*, University of Madras, Chennai, India.

## **Personal information**

Nationality	Indian
Father Name	Mr. D. Mathivathanan
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## **References**

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