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Academic Experience

- 9.2022 – Present** **Associate Prof. University of Kashan, Iran**
- 9.2020 – 8.2022** **Assistant Prof. University of Kashan, Iran**
- 9.2017 – 9.2020** **Alexander von Humboldt Post Doctoral Fellow**
Max-Planck Institute for Polymer Research, Germany
Project:
“high-k nanocomposite synthesis using Atom Transfer Radical Polymerization for energy storage application”
- 9.2013 – 9.2017** **Assistant Prof. University of Kashan, Iran**
Independent research group on piezoelectric Polymers
Supervised 2 PhD students and 5 master student
Teaching courses on: Advanced Physical Chemistry of Polymers, Polymer Nanocomposites, etc.
- 8.2015 – 2.2016** **Post Doctoral Endeavor Fellow, Deakin University, Australia**
Projects:
1- “Thermodynamic approach to tailor porosity in piezoelectric polymer fibers for application in nanogenerators”
2- “Investigation of effects graphene and cellulose nanocrystals on power output of piezoelectric nanogenerators”
3- “Polymer blends as a tool to modify surface of carbon nanotubes to cheetah skin”

Education

- 2009 – 2013** **PhD. Polymer Engineering(GPA 18.21)**
Amirkabir University of Technology
Dissertation: “Effects of vulcanization and nanoclay on morphological and crystalline structure of PVDF/ACM Polymer Blends”.
- 2006 – 2008** **MSc. Polymer Engineering(GPA 16.54)**
Amirkabir University of Technology
Thesis: “Morphological and Mechanical Properties of PET/EVA/PP Ternary Polymer Blends”.
- 2001 – 2005** **BSc. Chemical Engineering(13.9)**
Isfahan University of Technology
Thesis: “Calculation of economic diameter of pipelines”.

Awards

- 2017** George Forster Fellowship from the Alexander von Humboldt Foundation, Germany.
- 2015** Endeavour Fellowship from the Australian Government, Australia.
- 2013** PhD scholarship from Ministry of Science, Iran.

Publications (Google scholar H-index 23)

Book Chapters

1. Michels, J. J., Dehsari, H. S., **Abolhasani, M. M.**, & Asadi, K. (2022). Liquid structuring in fluoropolymer solutions induced by water. In *Organic Ferroelectric Materials and Applications* (pp. 357-373). Woodhead Publishing.
2. **Abolhasani, M. M.** and Karimkhani, V. (2014) Characterization of Polymer Blends with Solid-State NMR Spectroscopy, in *Characterization of Polymer Blends: Miscibility, Morphology and Interfaces* (eds S. Thomas, Y. Grohens and P. Jyotishkumar), Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany.ch21
3. Nayak, G.C. Mishra, J., Tiwari, S.K., **Abolhasani, M. M.**, Azimi, S. (2017) Fundamentals of Polymer Blends and Its Thermodynamics, in *Micro and Nano Fibrillar Composites (MFCs and NFCs) from Polymer Blends* Elsevier , Woodhead Publishing Series in Composites Science and Engineering.ch2

Peer Reviewed

1. **Abolhasani, M. M.**, Soleimani, H., Preparation and Evaluation of Piezoelectric Nanogenerators Based on PVDF Nanowires. *Energy Engineering and Management* 2023, 12 (3), 106-113
2. Pourbafrani, M., Azimi, S., Yaghoobi Nia, N., Zendehtdel, M., **Abolhasani, M. M.** The Effect of Electrospinning Parameters on Piezoelectric PVDF-TrFE Nanofibers: Experimental and Simulation Study. *Energies* 2022, 16 (1), 37.
3. **Abolhasani, M. M.**, Azimi, S., Mousavi, M., Anwar, S., Hassanpour Amiri, M., Shirvanimoghaddam, K., ... & Asadi, K. Porous graphene/poly (vinylidene fluoride) nanofibers for pressure sensing. *Journal of Applied Polymer Science*, 2022 139(14), 51907.
4. Abolhasani, A., Pachenari, A., Razavian, S.M., **Abolhasani, M. M.**, Towards new generation of electrode-free conductive cement composites utilizing nano carbon black. *Construction and Building Materials* 323, 126576.
5. Samimi-Sohrforozani, E., Azimi, S., Abolhasani, A., ... **Abolhasani, M. M.**, Yaghoobi Nia, N., Development of porous polyacrylonitrile composite fibers: new precursor fibers with high thermal stability. *Electronic Materials* 2021, 2 (4), 454-465.
6. Azimi, S., Abolhasani, A., Moosavi, S. M., Vanaei, F., Jafari, A., Samimi-Sohrforozani, E., ... & **Abolhasani, M. M.** Development of a Vehicle Passage Sensor Based on a PVDF Nanogenerator. *ACS Applied Electronic Materials*, 2021, 3(11), 4689-4698.
7. Azimi, S.; Golabchi, A.; Nekookar, A.; Rabani, S.; Hassanpour Amiri, M.; Asadi, K.; **Abolhasani M. M.** "In Vivo Implantation of Piezoelectric Polymer Nanogenerator on Ventricle to Power Cardiac Pacemakers " *Nano Energy* 2021, 83, 105781.
8. Anwar, S; Hassanpour Amiri, M.; Shuai, J.; **Abolhasani, M. M.** ;Asadi, K. "Piezoelectric nylon-11 nanofibers for energy harvesting and sensing" *Advanced Functional Materials* 2021, 31, 2004326.

9. Nia, N.; Zendehtdel, M.; Abdi-Jalebi, M.; Castriotta, LA.; Kosasih, Fu.; Lamanna, E.; **Abolhasani, M. M.**; et al. "Beyond 17% stable perovskite solar module via polaron arrangement of tuned polymeric hole transport layer" *Nano Energy* 2021, 82, 105685.
10. Soleymani, H.; Noormohammadi, M.; Kashi, M. A.; Amiri, M. H.; Michels, J. J.; Asadi, K.; **Abolhasani, M. M.** "Self-Poled Sausage-Like PVDF Nanowires Produced by Confined Phase Inversion as Novel Piezoelectric Nanogenerators" *Advanced Materials Interfaces*, 2021, 2001734.
11. **Abolhasani, M. M.**; Naebe, M; Shirvanimoghaddam, Anwar, S; Amiri, M.H.; Michels, J; Asadi, K. "Hierarchically structured porous piezoelectric polymer fibers" *Advanced Science* 2020, 7, 2000517.
12. Anwar, S; **Abolhasani, M. M.**; Amiri, H. M.; Jeong, B.; Asadi, K. "Polymer Field-Effect Transistor Memory Based on Ferroelectric Nylon Gate Insulator" *Journal of Material Chemistry C* 2020, 8, 5535-5540.
13. Ashjari, M.; Panahandeh, F.; Niazi, Z.; **Abolhasani M. M.** "Synthesis of PLGA–mPEG star-like block copolymer to form micelle loaded magnetite as a nanocarrier for hydrophobic anticancer drug" *Journal of Drug Delivery Science and Technology* 2020, 56, 101563.
14. **Abolhasani, M. M.**; Naebe, M; Shirvanimoghaddam, M; Fashandi, H; Hamid Khayyam, Joordens, M; Pipertzis, A; Anwar, S; Berger, R; Floudas, G; Michels, J; Asadi, K. "Thermodynamic approach to tailor porosity in piezoelectric polymer fibers for application in nanogenerators" *Nano Energy* 2019, 62, 594-600.
15. Shirvanimoghaddam, M.; Shirvanimoghaddam, K.; **Abolhasani, M. M.**; Farhangi, M.; Zahiri, V. Barsari, F.; Liu, H.; Dohler, M.; Naebe, M. "Towards a green and self-powered Internet of Things using piezoelectric energy harvesting" *IEEE Access* 2019, 7, 94533-94556.
16. **Abolhasani, M. M.**; Jalai, A; Tavana, R; Kashani, F. Z. "Processing and performance properties of amino silicone-based softener on various textile substrates" *Polymer Bulletin* 2019, 1-16.
17. Mishra, R.; Mishra, P.; Verma, K.; Mondal, A.; Chaudhary, R.; **Abolhasani, M. M.**; Loganathan S. "Electrospinning production of nanofibrous membranes" *Environmental Chemistry Letters* 2019, 7, 767-800.
18. **Abolhasani, M. M.**; Shirvanimoghaddam, k; Khayyam, H; Mousavi, M; Zohdi, N; Naebe, M. "Towards predicting the piezoelectricity and physiochemical properties of electrospun P(VDF-TrFE) nanogenerator using an artificial neural network" *Polymer Testing* 2018, 66, 178-188.
19. Shirvanimoghaddam, K; **Abolhasani, M. M.**; Poliseti, B.; Naebe, M. "Periodical patterning of a fully tailored nanocarbon on CNT for fabrication of thermoplastic composites". *Composites Part A: Applied Science and Manufacturing* 2018, 107, 304-314.
20. Shirvanimoghaddam, k; Czech, B; **Abolhasani, M. M.**; Naebe, M. "Sustainable shape controlled and periodically patterned carbon nanotube for catalysis application: introducing the cheetah skin structure" *Journal of Cleaner Production* 2018, 179, 429-440.
K Shirvanimoghaddam, K; **Abolhasani, M. M.**; Li, Q; Khayyam, H; Naebe, M. "Cheetah skin structure: A new approach for carbon-nano-patterning of carbon nanotubes" *Composites Part A: Applied Science and Manufacturing* 2018, 95, 304-314
21. **Abolhasani, M. M.**; Shirvanimoghaddam, k; Naebe, M. "PVDF/graphene composite nanofibers with enhanced piezoelectric performance for development of robust nanogenerators" *Composites Science and Technology* 2017, 138, 49-56.
22. Shirvanimoghaddam, k; **Abolhasani, M. M.** ; Li, Q.; Naebe, M. "A new approach for carbon-nano-patterning of carbon nano-tubes" *Composites Part A: Applied Science and Manufacturing* 2017, 95, 304-314
23. Fashandi H, **Abolhasani M. M.**, Sandoghdar P, Zohdi N, Li Q, Naebe M. "Morphological changes towards enhancing piezoelectric properties of PVDF electrical generators using cellulose nanocrystals" *Cellulose*

- 2016 23 (6), 3625-3637.
24. **Abolhasani M. M.**, Ashjari M., Azimi S., Fashandi H. "Kinetic of Isothermal Crystallization of Poly(vinylidene fluoride) (PVDF) in a Miscible Nanocomposite blend" *Macromolecular Chemistry and Physics* 2016, 217, 533.
25. Naebe. M, **Abolhasani M. M.**, Khayyam. H, Amini. A, Fox. B, "Microcrack Damage in Polymers and Composites: A Review" *Polymer Reviews* 2016, 56, 31.
26. **Abolhasani. M. M.**, Fashandi. H, Naebe. M, "Crystalline Polymorph Transition in Poly(Vinylidene Fluoride)(PVDF)/Acrylic Rubber(ACM)/Clay Partially Miscible Hybrid" *Polymer Bulletin* 2016,73, 65.
27. Ghodsi. A Fashandi H, Zarrebini, M., **Abolhasani M. M.**, Gorji M. "Highly Effective CO₂ Capture Using Super-fine PVDF Hollow Fiber Membranes with Sub-layer Large Cavities" *RSC Advances* 2015, 5, 92234.
28. **Abolhasani M. M.**, Azimi S., Fashandi H, "Enhanced Ferroelectric Properties of Electrospun Poly(vinylidene fluoride) Nanofibers by Adjusting Processing Parameters" *RSC Advances* 2015,5, 61277.
29. Fashandi H., Zarrini K., Youssefi M., **Abolhasani M. M.**, " Synergistic contribution of spinneret diameter and physical gelation to develop macrovoid-free hollow fiber membranes using single orifice spinneret" *Industrial & Engineering Chemistry Research* 2015, 54, 7728.
30. **Abolhasani. M. M.**, "Effects of Dynamic Vulcanization on Kinetics of Isothermal Crystallization in a Miscible Polymeric Blend" *New Journal of Chemistry* 2015,39, 6130.
31. Baqeri M., **Abolhasani. M. M.**, Mozdianfard M.,Guo Q., Oroumei, A, Naebe. M, "Influence of processing conditions on polymorphic behavior, crystallinity and morphology of electrospun poly(vinylidene fluoride) nanofibers" *Journal of Applied Polymer Science* 2015, 132, 42304.
32. Fashandi H, Yegane A, **Abolhasani M. M.** " Interplay of Liquid-liquid and Solid-liquid Phase Separation Mechanisms in Porosity and Polymorphism Evolution Within Poly(vinylidene fluoride) Nanofibers" *Fibers and Polymers* 2015, 16, 326.
33. **Abolhasani M. M.**, Zare. F, Zhenxiang Cheng, Naebe. M "A facile method to enhance ferroelectric properties in PVDF nanocomposites" *RSC Advances* 2015, 5, 22471.
34. **Abolhasani M. M.**, Rezai. M., Magniez. K., Guo. Q, "Fold surface free energy determination of PVDF lamellae in new miscible blends of PVDF/ACM by different thermal analysis technique" *Journal of Thermal Analysis and Calorimetry* 2015, 119, 527.
35. **Abolhasani. M. M.**, Zare. F, Naebe. M, "Does dynamic vulcanization induce phase separation?" *Soft Mater* 2014, 10, 5550.
36. **Abolhasani. M. M.**, Naebe. M, Zare, Y. Guo. Q, "Crystalline structures and α β and γ polymorphs transformation induced by nanoclay in PVDF-based nanocomposite" *Nano* 2014, 9, 1450065.
37. **Abolhasani M. M.**, Naebe M, Guo. Q, "A new approach for mechanisms of ferroelectric crystalline phase formation in PVDF nanocomposite" *Physical Chemistry Chemical Physics* 2014, 16, 10679.
38. **Abolhasani M. M.**, Naebe. M, Jalali. A, Guo. Q "Influence of miscibility phenomenon on crystalline polymorph transition in poly(vinylidene fluoride)/acrylic rubber/clay nanocomposite hybrid" *PLoS ONE* 2014, 9(2): e88715.
39. **Abolhasani M. M.**, Jalali. A, Guo. Q, Nazokdast. H, "Poly(vinylidene fluoride)-acrylic rubber partially miscible blends: Crystallization within conjugated phases induce dual lamellar crystalline structure" *Polymer* 2013, 54, 4686.
40. **Abolhasani M. M.**, Guo. Q, Jalali. A, Nazokdast. H, "Poly(vinylidene fluoride)-acrylic rubber partially miscible blends: Phase behaviour and its effects on mechanical properties" *Journal of Applied Polymer Science* 2013, 130, 1247.
41. **Abolhasani M. M.**, Arefazar, A. Mozdianfard M. "Effect of Dispersed Phase Composition on Morphological and Mechanical Properties of PET/EVA/PP Ternary Blends" *Journal of Polymer Science. Part B.* 2010, 48,251.

42. **Abolhasani M. M.**, Arefazar A, SHokoohi SH. "PET/EVA/PP Ternary Blends: Investigation of Extended Morphological Properties" *Journal of Applied Polymer Science* 2009, 112, 1716.

Supervising activity

PhD Students

1. Rasoul Ahadi
Dissertation:" Development of self-powered electronic textile for continuous long-term heart monitoring".
2. Mehdi Khorsand
Dissertation:" Development of 2D perovskite solar cells in n-i-p planar configuration via crystal engineering approach."

Graduated PhD Students

1. Dr. Sara Azimi
Dissertation:" Preparation and characterization of piezoelectric nanostructures based on PVDF as biomechanical energy harvesters for animal model".
2. Dr. Hosna Soleimani
Dissertation:" Fabrication of self-poled poly (vinylidene fluoride) nanofibers as piezoelectric fluid flow sensor".
3. Dr. Mahdi Pourbaferani
Dissertation:" Development of porous piezoelectric nano-droplets for human machine interface application."

Graduated MSc. Students

1. Ms. Maedeh Baqeri
Thesis:" Influence of processing conditions on polymorphic behavior, crystallinity and morphology of electrospun poly(vinylidene fluoride) nanofibers".
2. Ms. Fatemeh Vanaei
Thesis:" Fabrication of piezoelectric energy harvesters based on poly (vinylidene fluoride) ZnO-TiO₂ hybrid composite nanofiber".
3. Ms. Fatemeh Seyrani
Thesis:"Fabrication of motion sensors using Graphene-TiO₂ hybrid doped in PVDF nanofibers".
4. Mr. Amin Jalai
Thesis:" Processing and performance properties of amino silicone based softener on various textiles substrate".
5. Mr. Mohammad Reza Alavi
Thesis:" Optimization of Electrospinning Parameters using Computational Intelligence for Energy Harvesting of PVDF-based Nanogenerator".