

# Hossein Cheraghi Bidsorkhi

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## Education

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### **Doctor of Philosophy, Material and Nanotechnology Engineering, 2018**

Department of Material, Electrical and Energy Engineering

Sapienza University of Rome (La Sapienza), Rome, Italy

**Thesis:** Large Scale Production of Porous and Non-Porous PVDF/Graphene Nanocomposites for Electrical and Electromechanical Applications. (**Judgment: Excellent**)

### **Master of Science, Polymer Engineering, (GPA: A) 2013**

Department of Polymer Engineering

University Technology Malaysia (UTM), Johor Bahru, Malaysia

**Thesis:** Effect of Sepiolite on Mechanical, Thermal and Flammability Properties of Ethylene Vinyl Acetate Nanocomposite

### **Bachelor of Science, Polymer Engineering, (GPA: A), 2009**

Department of Polymer and Nanotechnology Engineering

Azad University (IAU), Isfahan, Iran

**Thesis:** Improving Physical and Mechanical Properties of Polymeric Asphalt by Carbon Based Recycled Polymeric Materials

## Professional Experiences

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- ❖ **Assistant Professor of Advanced Material** in the Engineering Faculty at the Sapienza University of Rome, Italy  
Activities: Teaching courses related chemical and electrical engineering; PI of sensorized Mask for aAdvanced hEalthcaRe moNitoring project (BE-FOR-ERC grant); Supervising PhD and MSc students  
December 2021- Present
- ❖ **Health & Safety Manager (Responsabile del Servizio di Prevenzione e Protezione (RSPP))** in the DIAEE department at Sapienza University of Rome, Italy  
March 2021- Present
- ❖ **Senior Research Fellow** in Material and Nanotechnology Engineering at Research Center for Nanotechnology Applied to Engineering of Sapienza (CNIS), Italy  
Activities: Teaching courses related to polymer and nanotechnology engineering; Team leader in manufacturing process and design for more than six national and international projects; Design and production of novel polymer composites for wide range of Applications; Supervising PhD and MSc students  
March 2019- December 2021
- ❖ **Postdoctoral Researcher Fellow** in Material and Nanotechnology Engineering at Sapienza University of Rome, Italy  
Activities: Developed production of novel polymers from different categories including elastomers, thermoplastics, as well as thermosets whose properties were tuned and enhanced by various nanoparticles; Supervising PhD and MSc students  
March 2018- February 2019 (1 year)

- ❖ **PhD Fellowship** in Material and Nanotechnology engineering at Sapienza University of Rome, Italy  
Activities: Synthesized and modified nanomaterials and polymer nanocomposites for various applications. In charge of Atomic Force Microscopy (AFM), Optical Microscopy, and Mechanical test at Research Center for Nanotechnology Applied to Engineering of Sapienza (CNIS), Sapienza University of Rome. November 2014- February 2018 (three year and four months)
- ❖ **Research assistance** in Membrane Science and Technology at Advanced Membrane Technology Research Centre (AMTEC), University Technology Malaysia (UTM), Malaysia  
Activities: Synthesized and modified nanoparticles, polymer nanocomposites, polymer thin films, and membranes for using in desalination, nano-filtration, and gas separation application. April 2013- April 2014 (1 year)
- ❖ **Technical Manager and Researcher**, Akavan Asphalt Cooperative Society, Iran  
Activities: Researched, implemented new programs, developed products and protocols into the company. January 2008 - August 2009 (1 year and eight months)
- ❖ **Marketing assistant**, World Polymer Company , Iran  
Activities: directed projects to maximize profits, and developed sale's strategies of the company and sales strategies. October 2005 – December 2007 (2 year and two months)

## Teaching Experiences

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- ❖ **Teaching** at Sapienza University of Rome (La Sapienza), Rome, Italy  
Courses' topics: Polymer processing technology, Polymer Characterization, Polymer Synthesis; laboratory courses: Polymer Composites Manufacturing, Mechanical Characterization. April 2016- Present
- ❖ **Teaching Assistant** at the University Technology Malaysia (UTM), Johor, Malaysia  
Activities: Taught a part of Polymer Technolgy1-2, Polymer Synthesis, Polymer Characterization; Assisted students' projects and exercises. February 2012- February 2013 (1 year)

## Honors and Distinctions

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- ❖ **1st Place Winner of Ph.D. Fellowship**, University of Rome "La Sapienza," Rome, Italy, 2014
- ❖ **Finalist Best Paper Award**, The 17th IEEE Nano 2017, Pittsburgh (US), 2017
- ❖ **Best Student Award** - Master of Science (Polymer Technology), University Technology Malaysia, 2014
- ❖ **Best Paper Award**, The International Conference on the Science and Engineering of Materials 2013 (ICoSEM2013), Malaysia, 2013
- ❖ **5th Place Award**, Iranian Chem-E-Car, Electrical and Chemical Robots competition, Iran, 2009
- ❖ **1st Place Award**, Iranian Chem-E-Car, Electrical and Chemical Robots competition, Iran, 2008
- ❖ **2nd Place Award**, Iranian Chem-E-Car, Electrical and Chemical Robots competition, Iran, 2007

## National and European Research Projects

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- ❖ **Principal Investigator** of the project " sensorized Mask fOr aDvanced hEalthcaRe moNitoring project (MODERN)" (BE-FOR-ERC 2021).
- ❖ **Research grant**, "Sensorized face masks for advanced healthcare monitoring ", SENSE MASC-LazioInnova (prot. A1700-2021-10053) 2021
- ❖ **Research grant**, "Development of a wearable device for real-time monitoring of heart rate, breathing, and sweating in work and sports environments ", SMILE -INAIL (prot. A0320-2021-28107) 2021

- ❖ **Research grant**, "Development of intelligent sensorized clothes for the prevention and mitigation of risks for the safety of workers "-SENSE RISC- INAIL (BRIC program-2018- Prot. n. 43578). 2020
- ❖ **Research fellowship grant**, "Development of graphene-based paints for deformation sensors and electromagnetic screens", SMART-EMA (Regione Lazio-CUP B86C18000920005). 2019
- ❖ **Research grant**, "Characterization of the mechanical properties of polymeric coatings loaded with graphene and zinc oxide nanostructures", NANODISP-INAIL (CUPB62F17000210005). 2019
- ❖ **Research grant**, "Hipoxia-like effect of zinc oxide nanorods on tumor and non-tumor cells", University Sapienza of Rome, Muir Projects (RG11916B754ADE63). 2019
- ❖ **Research Fellowship grant**, "Development of Suspensions and Coatings Containing Graphene and Zinc Oxide Nanostructures" NANODISP-INAIL (CUPB62F17000210005). 2018
- ❖ **Research grant** " Smart Envelope for Zero Energy Buildings " University Sapienza of Rome, Muir Projects (RM11715C7F42A320). 2017
- ❖ **Principal Investigator, Research grant**, Large scale production of GNP/PVDF film nanocomposites with enhanced electrical and mechanical properties" University Sapienza of Rome, Muir Projects (AR11615506310E92). 2016
- ❖ **Principal Investigator, Research grant**, "Production of graphene-based PDVF composite films with sensing properties for the monitoring of cultural heritage " PON funds - PON03PE\_00214 (CUPB62F14000560005). 2015
- ❖ **Principal Investigator, Research grant**, "Novel graphene functionalization for Polydimethylsiloxane (PDMS) nanocomposites fabrication", CINECA-MIUR-2015. 2014

## Skills and Certifications

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### Software Skills

- ❖ COMSOL Multiphysics, Mountains lab Premium, Nano Scope Analysis, MATLAB, Origin Lab

### Technical Skills

- ❖ University Teaching certificate, the University of Hong Kong.
- ❖ Advance Material Characterization, X-Ray Microscopy, Scanning Electron Microscopy (SEM)
- ❖ Advances in Atomic Force Microscopy (AFM)
- ❖ Nanomechanical characterization techniques in SEM and TEM
- ❖ Fracture Mechanics
- ❖ Correlative Microscopy in Life Science: Bridging the Macro and Nano world
- ❖ Certificate of computer operator training

## Organization of Scientific Meetings

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- ❖ **Organizing Committee and Sessions Chair**
  - Scholars International Conference on Catalysis and Chemical Engineering, Rome, Italy, 2021
  - IEEE 20th International Conference on Environment and Electrical Engineering, Madrid, Spain, 2020
  - IEEE 19th International Conference on Environment and Electrical Engineering, Genova, Italy, 2019
  - IEEE 15th International Conference on Nanotechnology, IEEE NANO 2015, Rome, Italy, 2015

## Patents

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1. "Novel antibacterial graphene polymer composites spray coating for high touch surface disinfection application" 2021, N.D:102021000000848. **Contribution:** devised, manufactured, characterized, wrote.

2. “Hybrid nanocomposite film, thin and flexible, with PVDF polymer matrix, partially loaded with GNP and containing metal elements for electricity generation, desalination and sensor applications.” 2021, N.D: 102021000019073. **Contribution:** designed, built, evaluated, wrote.
3. “Graphene coating on polyester fibers with high thermal resistance in aerospace application”, March 2021, patent pending. **Contribution:** designed, created, assessed, wrote.

## Publication List

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### Book Chapter

1. A Akbari, M A.Tehrani, and H Cherghibidsorkhi, Book Chapter “Polystyrene layered silicate nanocomposites” in “Handbook of Polymernanocomposites, Processing, Performance and Application – Volume A: Layered Silicates”, published on Springer Berlin Heidelberg, ISBN: 978-3-642-38648-0 (Print) 978-3-642-38649-7 (Online), pp 205-221. 2014

### Peer-reviewed Journal Publications

1. H. C. Bidsorkhi, et al. "Waterproof Graphene-PVDF Wearable Strain Sensors for Movement Detection in Smart Gloves" **Sensors**, 2021
2. H. C. Bidsorkhi, A. G. D'Aloia, A. Tamburrano, A. Delfini, P. Ballirano, G. De Bellis, M. S. Sarto "3D Porous Graphene Based Aerogel for Electromagnetic Applications" **Nature Scientific reports**, 2019
3. H. C. Bidsorkhi, F. Marra, A. G. D'Aloia, A. Tamburrano, G. De Bellis, and M. S. Sarto 'Piezoresistive Fabric Produced Through PVDF-Graphene Nanocomposite Film Incorporation in Textile Via Screen Printing Technique', **IEEE Sensor Journal**, 2019.
4. H. C. Bidsorkhi, A. G. D'Aloia, G. De Bellis, A. Proietti, A. Rinaldia, M. Fortunato, P. Ballirano, P. Braccialeb, L. Santarellib, M. S. Sarto. "Nucleation Effect of Unmodified Graphene Nanoplatelets on PVDF/GNP Film Composites" **Materials Today Communications**, 2018.
5. H. C. Bidsorkhi, A. G. D'Aloia, A. Tamburrano; G. De Bellis, P. Bracciale, L. Santarelli, M. S. Sarto" Piezo-resistive properties of graphene based PVDF composite films for strain sensing" **IEEE Transactions on Nanotechnology**, 2018.
6. M. Fortunato, H. C. Bidsorkhi, G. De Bellis, F. Sarto, and M.S. Sarto," PFM Characterization of PVDF Nanocomposite Films with Enhanced Piezoelectric Response" **IEEE Transactions on Nanotechnology**, 2018.
7. A. G. D'Aloia, A. Proietti, H. C. Bidsorkhi, A. Tamburrano, G. De Bellis, F. Marra, M. S. Sarto. "Electrical, mechanical and electromechanical properties of graphene-polymer composites produced using different acetone-DMF solvents" **Polymer**, 2018, 10(1), 82, 2018.
8. H. C. Bidsorkhi, H. Riazi, D. Emadzadeh, M. Ghanbari, T. Matsuura, WJ Lau, A. F. Ismail. "Preparation and characterization of a novel highly hydrophilic and antifouling polysulfone/nanoporous TiO<sub>2</sub> nanocomposite membrane" **Nanotechnology**, 2017.
9. M. Soheilmoghaddam, H. Adelnia, H. C. Bidsorkhi, G. Sharifzadeh, MU. Wahit. "Development of Ethylene-Vinyl Acetate Composites Reinforced with Graphene Platelets" **Macromolecular Materials and Engineering**, 2016.
10. M. Mehrpouya, H. C. Bidsorkhi. "MEMS Applications of NiTi Based Shape Memory Alloys: A Review" **Micro and Nano systems**, 2016.
11. H. C. Bidsorkhi, H. Adelnia, R. H. Pour, M. Soheilmoghaddam "Preparation and characterization of ethylene-vinyl acetate/halloysite nanotube nanocomposites" **Journal of Materials Science**, 2015.
12. H. C. Bidsorkhi, H. Adelnia, Z. Mohamad "Characterization of ethylene-vinyl acetate (EVA) nanocomposites based on (un)modified sepiolite" the **journal of Polymer Composites**, 2015.
13. H. Adelnia, H. C. Bidsorkhi, AF Ismail, T Matsuura "Gas permeability and permselectivity properties of ethylene vinyl acetate/sepiolite mixed matrix membranes" **Separation and Purification Technology**, 2015.
14. H. C. Bidsorkhi, M Soheilmoghaddam, R. H. pour, H Adelnia, Z Mohamad. "Mechanical, thermal and flammability properties of Ethylene-vinyl acetate (EVA)/ sepiolite nanocomposites". **Polymer Testing**, 2014.

15. M. Soheilmoghadda; P. Pasbakhsh; H. C. Bidsorkhi; R. H. Pour; W. T. Whye; R.T. De Silva” Green fabrication of regenerated cellulose nanocomposites reinforced with exfoliated graphite nanosheets using BMIMCL ionic liquid”. **Polymer**, 2014.
16. H. Adelnia, J. N. Gavvani, H. Riazi, H. C. Bidsorkhi. “Transition behavior, surface characteristics and film formation of functionalized Poly(methyl methacrylate-co-butyl acrylate) particles”. **Progress in Organic Coatings**, 2014.
17. R. H. Pour; A. Hassan; M. Soheilmoghaddam; H. C. Bidsorkhi “Mechanical, thermal, and morphological properties of graphene reinforced polycarbonate/acrylonitrile butadiene styrene nanocomposites” **Polymer Composites**, 2014.

### ***Conference Publications***

1. H. C. Bidsorkhi, E. Bruni, L. R. Ballam, A. G. D’Aloia, D.Uccelletti, A.Polimeni, M. S. Sarto ‘Graphene based Antibacterial Coatings for Dental Applications’ NanoInnovation 2021 Conference, September 2021, Rome, Italy.
2. H. C. Bidsorkhi, L. R. Ballam, A. G. D’Aloia, A. Tamburrano, G. De Bellis, M. S. Sarto ‘Flexible Graphene Based Polymeric Electrodes for Low Energy Applications’ IEEE NANO 2020, July 2020, Montreal, Canada.
3. “Antimicrobial Coating Innovations to Prevent Infectious Diseases” invited as expert on Nano-coating, COST AMiCI, Poland, Feb 2020
4. H. C. Bidsorkhi, F. Marra, A. G. D’Aloia, A. Tamburrano, G. De Bellis, M. S. Sarto ‘Piezoresistive Fabric Produced Through PVDF-Graphene Nanocomposite Film Incorporation in Textile’ IEEE Sensor 2019, October, 2019, Montreal, Canada.
5. A. G. D’Aloia, H. C. Bidsorkhi, A. Tamburrano, G. De Bellis, M. S. Sarto ‘PVDF-Graphene Nanocomposite Coatings for Electromagnetic Wave Absorption’ The 2019 IEEE International Symposium on EMC+SIPI, July 2019, New Orleans, LA, USA.
6. “Antimicrobial Coating Innovations to Prevent Infectious Diseases” invited as expert on Nano-coating, COST AMiCI, Greece, Sep 2019
7. “Electroactive Polymers for Sensing and Energy Harvesting Applications, Micro-Nano Devices and Materials for Electrical Electromagnetic Applications and Fundamentals” Department of Electrical, Sapienza University of Rome, Italy, Nov 2019
8. H. C. Bidsorkhi, A. G. D’Aloia, A. Tamburrano, G. De Bellis, M. S. Sarto, ‘Porous Graphene based PVDF Aerogel Composite for Sweat Sensing Applications’ IEEE Nano 2018, July 2018, Cork, Ireland.
9. H.C. Bidsorkhi, A.G. D’Aloia, A. Tamburrano, G. De Bellis, M. S. Sarto ‘3D Porous Graphene Based Aerogel for Electromagnetic and Sweat Sensing Applications, ET2018 - XXXIV Riunione annuale dei Ricercatori di Elettrotecnica, June 2018, Rome (Italy).
10. “Enhancement of Mechanical and Thermal Properties of polymer Composite Based on Nanofiller” Department of Material and Nanotechnology, Sapienza University of Rome, May 2018
11. H. C. Bidsorkhi, A. G D’Aloia, A Tamburrano, G. De Bellis, P. Braccialeb, L. Santarellib, M. S. Sarto. ‘Piezo-resistive Properties of Graphene Based PVDF Composite Films for Strain Sensing’ IEEE Nano 2017, July 2017, Pittsburgh (US). **BEST PAPER AWARD**
12. M. Fortunato, H. C. Bidsorkhi, G. De Bellis, F. Sarto, and M.S. Sarto, “Piezoelectric Response of Graphene-Filled PVDF Nanocomposites Through Piezoresponse Force Microscopy (PFM)” IEEE Nano 2017, July 2017, Pittsburgh (US).
13. “Development of and Polymer and Nanostructured Material” The National Research Council (CNR), Napoli, Italy, Nov 2017
14. H. C. Bidsorkhi, A.G. D’Aloia, F. Marra, G. De Bellis, A. Tamburrano, M.S. Sarto ‘Effects of functional groups of exfoliated graphite on the electromagnetic properties of polymer composites’, ET2016 - XXXII Riunione annuale dei Ricercatori di Elettrotecnica, June 2016, Palermo (Italy).

15. H.C. Bidsorkhi, A.G. D'Aloia, F. Marra, G. De Bellis, A. Tamburrano, M.S. Sarto 'Effects of functional groups of exfoliated graphite on the electromagnetic properties of polymer composites', ET 2015, June 2015, Genova (Italy).
16. H. C. Bidsorkhi, Z. Mohamad. "Effect of Sepiolite on Mechanical and Flammability Properties of Ethylene Vinyl Acetate Nanocomposite", Advanced Materials Research journal at International Conference on the Science and Engineering of Materials 2013 (ICoSEM2013), Malaysia. BEST PAPER AWARD
17. H. C. Bidsorkhi, Z. Mohamad, E. Halakoo, "Effect of Sepiolite on Thermal and Mechanical Properties of Ethylene Vinyl Acetate Nanocomposite", International Journal of Chemical Engineering and Applications at International Conference on Chemical Science and Engineering (ICCSE). December 2013, Malaysia.
18. E. Jalalvandi, T. Ghanbari, H. C. Bidsorkhi, E. Zeimaran. "Processing, Thermal Behavior and Tensile Properties of PLA/Thermoplastic Starch/Montmorillonite Nanocomposites", Advanced Materials Research Vol. 684 (2013) pp 75-79, April 2013, Malaysia.
19. E. Halakoo, J. Adabi, H. C. Bidsorkhi (2013), "Application of membrane science to remove endocrine disrupting compounds (EDCs) and pharmaceutically active compounds (PhACs)" at International Conference on Chemical Science and Engineering (ICCSE). December 2013, Malaysia.