

# HOSSEIN CHERAGHI BIDSORKHI

## Scientific Curriculum Vitae

### Part I – General Information

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| Full Name | Hossein Cheraghi Bidsorkhi |
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| Spoken Languages | Persian ( <i>mother tongue</i> ), Kurdish ( <i>mother tongue</i> ), English, Italian |
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### Part II – Education

| Type                  | Year | Institution   | Notes (Degree, Experience,...)   |
|-----------------------|------|---|--|
| University graduation | 2009 | Azad University (IAU)<br>Pasdaran Street<br>Shahreza, Isfahan<br>8648146411 - Iran<br><a href="https://iaush.ac.ir/">https://iaush.ac.ir/</a>                                   | Bachelor's Degree in <i>Chemical-Polymer Engineering</i> , - grade: (GPA: A) Honor<br><br>Thesis: “Improving Physical and Mechanical Properties of Polymeric Asphalt by Carbon Based Recycled Polimeric Materials”, Advisor: Prof. Zohreh Hadi   |
| University graduation | 2013 | University Technology Malaysia (UTM)<br>Sultan Ibrahim Chancellery Building, Jalan Iman, 81310 Skudai, Johor, Malaysia<br><a href="https://www.utm.my/">https://www.utm.my/</a> | Master's Degree in <i>Chemical-Polymer Engineering</i> , - grade: (GPA: A) Honor<br><br>Thesis: “Effect of Sepiolite on Mechanical, Thermal and Flammability Properties of Ethylene Vinyl Acetate Nanocomposite”, Advisor: Prof. Ahmad Fauzi Ismail (Vice-Chancellor of University Technology Malaysia, UTM) |

|             |       |   |  |
|-------------|-------|---|--|
| PhD         | 2018  | Sapienza University of Rome<br>Piazzale Aldo Moro, 5, 00185<br>Roma RM<br><a href="https://www.uniroma1.it/it/">https://www.uniroma1.it/it/</a> | PhD in <i>Electrical, Material and Nanotechnology Engineering</i> ,<br>Thesis: “Large Scale Production of Porous and Non-Porous PVDF/Graphene Nanocomposites for Electrical and Electromechanical Applications”,<br>Advisor: Prof. Maria Sabrina Sarto, Judgment: Ottimo (Excellent) |
| Licensure 1 | 2021  | Sapienza University of Rome and National Italian Institute of Public Health (INAIL)   | Officially appointed as:<br>Health and Safety Officer (HSO)<br>Responsabile del Servizio Prevenzione e Protezione (RSPP)   |
| Licensure 2 | 2021  | Sapienza University of Rome and National Italian Institute of Public Health (INAIL)   | Attendance Certificate of “Corso di Alta Formazione: Rischi ed opportunità connessi all’uso delle nanotecnologie e delle tecnologie abilitanti”, Director: Prof. M.S. Sarto  |
| Licensure 3 | 2022* | Sapienza University of Rome and National Italian Institute of Public Health (INAIL)   | II level University Master Degree in GESTIONE INTEGRATA DI SALUTE E SICUREZZA NELL'EVOLUZIONE DEL MONDO DEL LAVORO*<br>Director of the Master: Prof. Antonella Polimeni, Rector of Sapienza University of Rome   |

- (\*) This two-year Master Programme is promoted by the National Italian Institute of Public Health (INAIL) and by Sapienza University of Rome. It involves the Faculties of Medicine and Dentistry, of Pharmacy and Medicine, of Civil and Industrial Engineering, of Law in collaboration with Research Department and Central and Technical structures of INAIL. The Director of the Master is Prof. Antonella Polimeni, Rector of Sapienza University of Rome while the Scientific Coordinator is Dott. Sergio Iavicoli, Director of Dipartimento di Medicina, epidemiologia, igiene del lavoro e ambientale, INAIL. Due to ongoing COVID pandemic, the II level master degree has been postponed and it is predicted by June 2022 (A.Y. 2020-2021)

## Part III – Appointments

### III.A – Academic Appointments

| Start      | End        | Institution                         | Position  |
|------------|------------|-------------------------------------|---|
| 15/03/2021 | 14/03/2022 | Sapienza University of Rome - DIAEE | <p>PostDoc researcher (<i>Assegnista di ricerca</i>)</p> <p><i>Research topic:</i> Development of multifunctional graphene-based nanostructured coatings with sensing and antimicrobial properties (Sviluppo di coating polimerici nanostrutturati a base di grafene multifunzionali e con proprietà di sensing e antimicrobiche)</p> <p>Supervisor: Prof. M.S. Sarto</p> |
| 01/03/2020 | 28/02/2021 | Sapienza University of Rome - DIAEE | <p>PostDoc researcher (<i>Assegnista di ricerca</i>)</p> <p><i>Research topic:</i> Sviluppo di coating polimerici nanostrutturati a base di grafene multifunzionali e con proprietà di sensing e antimicrobiche/ development of multifunctional graphene-based nanostructured coatings with sensing and antimicrobial properties</p> <p>Supervisor: Prof. M.S. Sarto</p>  |
| 01/03/2019 | 28/02/2020 | Sapienza University of Rome - DIAEE | <p>PostDoc researcher (<i>Assegnista di ricerca</i>)</p> <p><i>Research Topic:</i> Sviluppo di vernici a base grafene per sensori di deformazione e schermi elettromagnetici</p> <p>Supervisor: Prof. M.S. Sarto</p>  |
| 01/03/2018 | 28/02/2019 | Sapienza University of Rome - DIAEE | <p>PostDoc researcher (<i>Assegnista di ricerca</i>)</p> <p><i>Research Topic:</i> Sviluppo di sospensioni e coating contenenti nanostrutture di grafene e di ossido di zinco</p> <p>Supervisor: Prof. M.S. Sarto</p>   |

## Part IV – Teaching experience

Dr. Hossein Cheraghi Bidsorkhi received comprehensive and advanced training in “*University Teaching*” in 2019 from the University of Hong Kong.

### IV.A – Teaching Assistance and Tutorial Activities

Dr. H. C. Bidsorkhi has been carrying out teaching assistant activities in the SSD ING-IND/31 Elettrotecnica, within:

- the course “Elettrotecnica, Impianti e Macchine Elettriche” (SSD ING-IND/31) for the Bachelor’s Degree in Clinical Engineering of Sapienza University, (II year, II cycle, 9 CFU, Prof. Giovanni De Bellis), during the Academic Years 2017/2018, 2018/2019, 2019/2020, 2020/2021.
- the course “Micro-Nano Devices and Materials for Electrical Electromagnetic Applications and Fundamentals” (SSD ING-IND/31) for the Master’s Degree Program in Nanotechnology Engineering at Sapienza University, (II year, II cycle, 6 CFU, Prof. Giovanni De Bellis, Prof. A.G. D’Aloia), during the Academic Years 2019/2020, 2020/2021. In particular, Dr. Cheraghi gave also the Seminar: Electroactive Polymers (EAP) for Sensing and Energy Harvesting Applications

Dr. H. C. Bidsorkhi has been carrying out teaching assistant activities in the Polymer Engineering at University Technology Malaysia within:

- the “Polymer Technology” course of the Master's Degree in Polymer Engineering. In particular, Dr. Bidsorkhi gave lectures concerning Developing, manufacturing and processing of different types of polymeric materials (synthetic, natural, thermoset, thermoplastic, and composites), Design of devices, Developing various properties of polymer by adding different nanoparticles. Academic Years 2011/2012 and 2012/2013 (I year, II cycle, 6 CFU, Prof. Azman Hassan).
- the “Polymer Characterization” course of the Master's Degree in Polymer Engineering, included Electrical, Mechanical, Electrothermal, Thermal, Chemical, and Morphological properties. Academic Years 2011/2012 and 2012/2013 (I year, II cycle, 3 CFU, Prof. Zurina Mohamad).

### IV.B – Laboratory Supervisor

Dr. H. C. Bidsorkhi has been Laboratory Supervisor at University Technology Malaysia within:

- the “Polymer Technology Laboratory” course of the Master's Degree in Polymer Engineering. Academic Years 2011/2012 and 2012/2013 (I year, II cycle, 3 CFU, Prof. Azman Hassan).
- the “Polymer Characterization Laboratory” course of the Master's Degree in Polymer Engineering, included Electrical, Mechanical, Electrothermal, Thermal, Chemical, and

Morphological properties. Academic Years 2011/2012 and 2012/2013 (I year, II cycle, 2 CFU, Prof. Zurina Mohamad).

#### IV.C – Advisor, Tutor and co-tutor of Bachelor’s and Master’s Degree Thesis and PhD Students

Dr. H. Ch. Bidsorkhi has been co-tutor of several students working towards their Bachelor’s and Master’s Thesis in Ingegneria Elettrotecnica, Ingegneria Clinica and Nanotechnology Engineering.

Here below the list of students co-supervised by Dr. H. Ch. Bidsorkhi in the last A.Y.

- *Co-tutor* of Francesco Retico, matricola 1630897, working towards his Master’s Thesis in Ingegneria Elettrotecnica  
Topic: **Biosensored masks with piezoresistive sensor for breathing monitoring**
- *Co-tutor* of Umberto Ricci, matricola 1630260, working towards his Master’s Thesis in Ingegneria Clinica  
Topic: **Development of graphene based wearable dry electrode**
- *Co-tutor* of Negin Faramazi, matricola 1897053, working towards her Master’s Thesis in Nanotechnology Engineering  
Topic: **Integrate the green humidity and respiration sensor on surgical mask for health care monitoring**
- *Co-tutor* of Maria Dello Russo, matricola 1733738, working towards his Bachelor’s Thesis in Ingegneria Clinica.  
Topic: **Innovative salt activated hygrometer based on graphene-based aerogel**
- *Co-tutor* of Bruno Bracci, matricola 1733729, working towards his Bachelor’s Thesis in Ingegneria Clinica.  
Topic: **Light weight 3D porous PVDF/Graphene humidity sensor**

Dr. H. Ch. Bidsorkhi has assisted the following PhD student during their research and laboratory activities:

- Lavanya Rami Bellam, working towards her PhD Thesis in “Dottorato di Ricerca in Ingegneria Elettrica, dei Materiali e delle Nanotecnologie-Curriculum: Nanotechnology”, Cycle XXXIV  
Topic: **Development of the novel lightweight self-power wearable graphene-based sensors for healthcare applications**
- Ali Babar, working towards his PhD Thesis in “Dottorato di Ricerca in Ingegneria Elettrica, dei Materiali e delle Nanotecnologie-Curriculum: Nanotechnology”, Cycle XXXVI  
Topic: **Novel ECG Electrodes based on textile coated with biocompatible graphene nanocomposites**

## Part V - Society memberships, Awards and Honors

### V.A – Awards and Honors

| Year | Title  |
|------|--|
| 2017 | <i>2017 IEEE NANO Best Paper Award - Finalist</i> , received during the 2017 IEEE International Conference on Nanotechnology, Pittsburgh (PA), USA, July 2017 for the paper “Piezo-Resistive Properties of Graphene Based PVDF Composite Films for Strain Sensing”, authors: H.C. Bidsorkhi, A.G. D’Aloia, A. Tamburrano, G. De Bellis, M.P. Bracciale, M.L. Santarelli, M.S. Sarto – The paper has been presented in the <b>Plenary Session of IEEE NANO 2017</b> , just after the presentation of Prof. Fraser Stoddart, Nobel Prize in Chemistry 2016 |
| 2014 | <i>1st Place Winner of Ph.D. Fellowship</i> , University of Rome “La Sapienza,” Rome, Italy, selected between more than 600 candidates   |
| 2014 | <i>Best Student Award - Master of Science (Polymer Technology)</i> , received during the University Technology Malaysia, (**)  |
| 2013 | <i>Best Paper Award</i> , received during the International Conference on the Science and Engineering of Materials 2013 (ICoSEM2013), Malaysia for the paper “Effect of Sepiolite on Mechanical and Flammability Properties of Ethylene Vinyl Acetate Nanocomposite”, authors: H. C. Bidsorkhi, Z. Mohamad.  |
| 2009 | <i>5th Place Award</i> , Iranian Chem-E-Car, Electrical and Chemical Robots competition, Iran, (***)   |
| 2008 | <i>1st Place Award</i> , Iranian Chem-E-Car, Electrical and Chemical Robots competition, Iran, (***)   |
| 2007 | <i>2nd Place Award</i> , Iranian Chem-E-Car, Electrical and Chemical Robots competition, Iran, (***)   |

(\*\*) The *Best Student Award* is given once a year to students with excellent academic and research records among all the *University Technology Malaysia* students

(\*\*\*)*Chem-E-Car* is an international competition that engages college students in designing and constructing a car powered by a chemical energy source, that will safely carry a specified load over a given distance and stop. Link: <https://www.aiche.org/students/chem-e-car-competitionr>

### V.B – Skills and Certificate

#### 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

#### V.C – Society Membership and Activities

Dr. Hossein Cheraghi Bidsorkhi is currently:

- *Member* of IEEE, Institute of Electrical and Electronics Engineers
- *Member* of Steering Committee of “STITCH - Sapienza information-based Technology InnovaTion Center for Health”. STITCH is an interdepartmental research center and aims at encouraging and increasing, by interdisciplinary integration, common research projects among departments, allowing the access to funding sources through the competitive advantage obtained by departments integration on complex instruments and/or laboratories management in these fields: internal medicine; radiological, oncological and anatomical pathological sciences; information science and technologies; miniaturization, sensors, artificial intelligence and other departments areas of expertise.

### **Part VI - Funding Information [grants as PI-principal investigator or I-investigator]**

#### VI.A – Participation in Research Projects as Investigator

- PARTICIPATION in the research project “Smart Envelope for Zero Energy Buildings” Sapienza University of Rome, MIUR Projects (RM11715C7F42A320). 2017  
The objective of the project was to identify the best innovative energy solutions for buildings envelope by investigating and testing the most advanced technologies, systems, materials and products aimed to maximize the building energy performance, the indoor comfort and the architectural quality. In particular, the research project addressed the latest generation of advanced materials and products for the building envelope, such as nanotechnology products and smart materials, that promise considerable potential advantages both in terms of improved performance and the development of attractive design solutions.  
*from 01-10-2016 up to 21-07-2017*
- PARTICIPATION in the research project “TECLA – Nanotechnologies and Nanomaterials for Cultural Heritage”- PON03PE\_00214\_1 (CUP B62F14000560005).  
The main activities were the design, fabrication and modelling of grapheme based piezoresistive strain and humidity sensors for application in the cultural heritage sector.  
*from 01-01-2016 up to 31-12-2017*
- PARTICIPATION in the research project “Hipoxia-like effect of zinc oxide nanorods on tumor and non tumor cells” Sapienza University of Rome, Muir Projects (RG11916B754ADE63). 2019  
The project delineated the mechanism of action of ZnONR on tumor and nontumor cells that help to understand their safety for human health and rationalize their use in medicine.  
*from 01-10-2019 up to 21-07-2020*

- PARTICIPATION in the “SENSE RISC” Project. The project, funded by INAIL under the BRIC program - 2018, consists in the development of intelligent sensorized clothes for prevention and mitigation of risks for the safety of workers.

The project aims to develop innovative sensors for physical, chemical and biological agents, based on nanotechnologies and nanomaterials integrated into textiles and networked by means of a modular wearable multisensory platform. This platform communicates via wireless with mobile devices (smartphone) and through innovative bio-operational algorithms of injury to individual workers.

The project is born from the collaboration of seven highly qualified partners, such as the Department of Astronautical, Electrical, Energy Engineering of Rome, the Department of technological innovations and safety of anthropogenic plants, products and settlements of INAIL, the Department of Biology and Biotechnology "Charles Darwin" of Sapienza University of Rome, the Department of Chemistry and Industrial Chemistry and the E. Piaggio Center of the University of Pisa, the Biorobotics Institute of the Scuola Superiore Sant'Anna of Pisa, the Faculty of Engineering of the Campus Bio-Medico University of Rome and the "IRCCS" Technological Pole of the Don Carlo Gnocchi Foundation of Milan.

*from 15-04-2019 up to now*
- PARTICIPATION in the Project “Development of highly sensitive, stretchable and compressible piezoresistive sensors made of threedimensional ordered graphene/elastomer foams with controlled electrical, mechanical and thermal properties” (funded with Euro 39.200 by Sapienza University of Rome, Progetto Grande, Bando per la Ricerca di Ateneo 2019, Prot. n. 43578, 14/05/2019). The project focuses on the development of porous strain sensors made with elastic polymeric composites loaded with graphene nanoplatelets in order to form an ordered conductive lattice able to change its electrical properties as a function of the deformation suffered. The temperature effect on the electromechanical characteristics of the composite will be investigated too.

*from 26-11-2019 up to now*
- PARTICIPATION in the Project “Design and Realization of Graphene Based Textiles for electromagnetic Applications”. This project was founded by Soliani EMC and it was aimed at the design, realization and characterization of graphene based absorbing textiles in the frequency range 8-18 GHz. The Project was aimed at fabricating wideband radar absorbing textiles and it has been concluded successfully in less than six months (the scheduled time was one year) despite the unexpected issues due to ongoing COVID-19 pandemic.

*from 26-02-2020 up to 26-06-2020*
- PARTICIPATION in the Project “SMILE”. This project aims to create a wearable, non-invasive and innovative system for continuous, real-time and remote monitoring of physiological parameters, physical activity and posture that affect well-being physical of people. The innovative solution is based on the use of wearable and wireless sensors, on the development of software aimed at integrating the data provided by the sensors. Continuous monitoring of heart rate, respiratory rate and sweating will provide information on the user's physical activity in order to identify potential critical and/or pathological conditions early.

The project is born from the collaboration between the Department of Astronautical, Electrical, Energy Engineering of Rome, the Faculty of Engineering of the Campus Bio-Medico University of Rome and the IT Company Integris S.p.a.

*from 13-10-2020 up to now*
- PARTICIPATION in the Project “NANOBIOSAN, Materiali NANOstrutturati per la prevenzione del rischio BIOlogico: dalla progettazione alla verifica di applicabilità ed efficacia in ambito SANitario”. The goal is to develop polymeric nanocoatings with antimicrobial and antiviral properties. Such coatings will cover commercial surgery masks or other personal safety protection devices.

*from 22-12-2019 up to now*



## VI.B – Participation in Research Projects as Principal Investigator

- PRINCIPAL INVESTIGATOR of the Project "Novel graphene functionalization for Polydimethylsiloxane (PDMS) nanocomposites fabrication" (Progetto Avvio alla Ricerca 2012, prot. C26N12ETP8)2014  
*from 13-10-2014 up to 13-04-2015*
- PRINCIPAL INVESTIGATOR of the project "Large scale production of GNP/PVDF film nanocomposites with enhanced electrical and mechanical properties " (Progetto Avvio alla Ricerca-AR11615506310E92-2016). This project is aimed at investigating a new process for the large scale production of GNP/PVDF film nanocomposites with enhanced electrical, mechanical and electromechanical properties. The experimental activities will be carried at Sapienza Nanotechnology and Nanoscience Lab (SNN-LAB). In order to define the best processing conditions, the produced samples will be characterized and analyzed by SEM, TGA, XRD, FTIR, EDX, spectroscopy, rheological measurement, mechanical properties and electrical conductivity measurements.  
*from 30-07-2015 up to 30-10-2016*

## VI.B – Dr. H. C. Bidsorkhi is involved in the following research project proposals:

- PRINCIPAL INVESTIGATOR of the project " sensorized Mask fOr aDvanced hEalthcaRe moNitoring: MODERN ". The aim of this project is to develop an innovative self-powered graphene based sensorized mask, able to detect respiration rate through humidity droplets deposition on graphene based flexible electrodes due to breathing. Different position of such flexible electrodes on the mask internal layers will be investigated to avoid direct contact with human face without compromising the sensitivity. Then, the electrodes will be combined with graphene based porous sensors in order to detect body temperature and humidity. The combined use of graphene-based electrodes and porous sensors can enable long-term monitoring of respiration rate, humidity and temperature with fast response and high sensitivity.  
*submitted to SAPIExcellence (BE-FOR-ERC 2021) public competition*  
<https://www.uniroma1.it/en/pagina/sapiexcellence>  
*admitted to short selection list – awaiting for the final decision*
- PARTICIPATION in the Project "Innovative multi-sensing graphene based wearable textiles for non-invasive motion detection and continuous long-term biophysical signal monitoring". The aim of the research project is to produce graphene based coated textiles able to conjugate electrical and piezoresistive properties with the aim of producing multi-sensing wearable sensors by direct deposition on commercial textiles (like T-shirt or fitness bands), without compromising fabric flexibility and stretchability. In addition, the coated textiles will be designed in order to guarantee washability, reusability and to prevent coating detachment. With this purpose, different designs and data processing will be proposed, investigating different polymeric matrices, shapes, sizes, etc. Then, data fusion algorithm will be developed in order to extract all the desired parameters.  
*submitted to Progetti di ricerca Grandi – Bando per la Ricerca di Ateneo 2021 – Principal Investigator: Dr. A.G. D'Aloiat – awaiting for the final decision*

## Part VII – Research Activities

### VII.A – Summary

#### *Keywords:*

Green Materials - Membranes - New materials design and development for wearable sensing applications - electrical, electromechanical properties of nanomaterials – piezoresistive sensors- - graphene – radar absorbing materials - nanocomposites for electrical, electromechanical and electromagnetic applications

#### *Brief Description:*

The scientific and research activities of Dr. Bidsorkhi are mainly focused on the design, development, fabrication and multifunctional characterization of graphene-based nanocomposites for applications in strain sensors, including wearable sensors, electromagnetic compatibility, electromagnetic shielding.

During his research activities, Dr. Bidsorkhi had the opportunity to investigate:

- Graphene based Nanomaterials Production and fabrication;
- Development of new graphene based coatings for sensing applications
- Development of new graphene based coatings for electromagnetic applications;
- Design and production of novel antibacterial coating material;
- Design and fabrication of graphene based PVDF nanocomposites for sensing applications
- Design and fabrication of graphene based PVDF nanocomposites for electromagnetic field absorption;

Moreover, Dr. Bidsorkhi had the opportunity to investigate novel graphene-based sensor for respiration monitoring among the activities of SENSE MASC project.

### VII.B – Research Experience on Topics Related to the Scientific Disciplinary Sector ING-IND/31

Since 2006 Dr. Bidsorkhi has collaborated in several research projects dealing with polymer nanocomposites production, nanoparticles synthesis, functionalization of polymer and nanoparticles, analysis and characterization polymer nanocomposites, design of new devices and production methods for several applications, including *sensing, energy harvesting, electromagnetic shielding* and *electromagnetic radar absorption*. In particular, he has collaborated in research activities concerning the synthesis, modeling and experimental characterization of nanocomposite materials consisting of polymeric matrices loaded with graphene-based fillers and Zinc-oxide nanomaterials for electromagnetic shielding and radar absorption purposes, as well as sensing and energy harvesting applications.

Dr. Cheraghi Bidsorkhi started his research activities during the second year of his Bachelor's Degree in Polymer Engineering, working on the design of electrochemical energy source devices for chemical robots, participating also to several Chem-E-Car\* competitions, achieving several Awards (detailed in Sect. V.A) in Nov 2008, Dec 2007 and Nov 2006.

Then, during his Bachelor's thesis project, he had the opportunity to develop new polymeric asphalt production techniques. Actually, his Bachelor thesis is titled "Improving physical and mechanical properties of polymeric asphalt using Carbone based material (from waste tire) and recycled plastics" and the developed production processes were then industrialized by the Akhavan Asphalt Company (Iran).

Later on, he took a Master of Science in Polymer Technology at University Technology Malaysia. There, he strongly developed his research career on Polymer engineering research. His M.Sc. project was on "Effect of sepiolite on Electrical, Mechanical, Thermal and Flammability properties of ethylene vinyl acetate nanocomposite". In this project, he adopted various methods for surface modification of sepiolite nanoparticles, in order to fabricate a new nanocomposite with enhanced Electrical, Mechanical, Thermal, and Flame resistance properties. His M.Sc. project opened a great window to his future research, which enabled him to work on the development of various polymer nanocomposites with enhanced properties such as EVA/graphene EVA/halloysite, EVA/ sepiolite, EVA/ modified sepiolite, EVA/halloysite nanotube, regenerated cellulose nanocomposites reinforced with exfoliated graphite nanosheets, surface characteristics, and film formation of functionalized Poly(methyl methacrylate-co-butyl acrylate) particles, graphene reinforced polycarbonate/acrylonitrile butadiene styrene nanocomposites. The results were published in several Q1 journals and conference proceedings. Dr. Bidsorkhi continued his research activities as a research assistant in membrane science and technology at the Advanced Membrane Technology Research Centre (AMTEC) of the University Technology Malaysia (UTM). Over this time frame, the focus of his research was on the synthesis and modification of nanoparticles (mesoporous TiO, graphene, zeolite, zinc oxide, etc), polymer nanocomposites, polymer thin films (Nailone), membranes (PVDF, PS) for several applications, such as gas sensors, desalination, nano-filtration and gas separation.

Then, he gained an international Ph.D. fellowship at Sapienza University of Rome. He continued his research activities on polymer nanocomposites for electrical and mechanical applications. His thesis project was focused on "Large Scale Production of Porous and Non-porous PVDF/GNPs Nanocomposites for Electrical and Electromechanical Applications" in which he developed several methods for the production of different graphene based PVDF nanocomposites with enhanced electrical, electromechanical, electromagnetic and thermal properties for several applications including sensing, energy harvesting, electromagnetic absorption and shielding for Space and Aerospace.

As a Postdoctoral Research Fellow, Dr. Bidsorkhi continued his research on polymer nanocomposites and he gained significant experience on biodegradable and biocompatible polymers such as elastomer (PDMS), PVDF, PS, PCL, and PVA, whose properties were tuned and enhanced by employing various nanoparticles (ZnO, TiO, graphene, CNT, etc). In particular, his research activities allowed the production of innovative graphene based PVDF 3D porous aerogels that can be successfully applied in the design of new electromagnetic absorbing materials, sweat humidity and deformation sensors, as well as drug delivery systems.

He has been involved in several national and international projects as a skilled researcher in the manufacturing process and design. For instance, one of the most recent projects was the development of graphene sensor coatings to be cast on felt fabrics for the structural health monitoring and for wearable body movement measurements. Currently, he is participating in SENS-Masc project, developing graphene-based coatings acting as strain sensors and deposited on the external layer of a surgical mask, able to monitor human respiration. Moreover, he has been involved in the development of antibacterial coating to be deposited over different substrates.

All these activities have led to the submission of two patents concerning self-powered sensor film and antibacterial coatings on different substrates.

These activities are documented by numerous scientific publications in international congresses and peer reviewed journals (the detailed list of publications is attached). In particular, he has selected twelve publications, most representative of his research activities in the Scientific Disciplinary Sector ING-IND/31 and coherent to the research topic: “Sviluppo di membrane polimeriche BIodegradabili e biocompatibili, Sensorizzate con tecnologia a base grafene, per mascherine facciali Smart a minimo impatto ambientale (BISS.)”.

## VII.C – Scientific Presentations in International Conferences and Symposia

Dr. Bidsorkhi gave more than fifteen scientific presentations in scientific and technical sessions of international conferences and IEEE Symposia, including workshops, tutorials, invited and plenary sessions. Here below the list of the main contributions.

1. *Speaker* at 2021 NanoInnovation 2021., September 22-26, 2019, Rome, Italy.  
Scientific contribution “Graphene based Antibacterial Coatings for Dental Applications” (authors: H. C. Bidsorkhi, E. Bruni, L. Rani, A. G. D’Aloia, D. Uccelletti, M. Bossù, A. Polimeni, M. S. Sarto).
2. *Speaker* at IEEE NANO 2020, July 2020, Montreal, Canada  
Scientific contribution ‘Flexible Graphene Based Polymeric Electrodes for Low Energy Applications’ (authors: H. C. Bidsorkhi, L. R. Ballam, A. G. D’Aloia, A. Tamburrano, G. De Bellis, M. S. Sarto).
3. *Invited Speaker as expert on Nano-coating* at Antimicrobial Coating Innovations to Prevent Infectious Diseases” invited as expert on Nano-coating, COST AMiCI, Poland, Feb 2020
4. *Speaker* at IEEE Sensor 2019, October, 2019, Montreal, Canada.  
Scientific contribution ‘Piezoresistive Fabric Produced Through PVDF-Graphene Nanocomposite Film Incorporation in Textile’ (authors: H. C. Bidsorkhi, F. Marra, A. G. D’Aloia, A. Tamburrano, G. De Bellis, M. S. Sarto).
5. *Invited Speaker as expert on Nano-coating* at Antimicrobial Coating Innovations to Prevent Infectious Diseases” invited as expert on Nano-coating, COST AMiCI, Poland, Feb 2020
6. *Speaker* at 2019 Electromagnetic Compatibility, Signal & Power Integrity, July 22-26, 2019, New Orleans, USA.  
Scientific contribution “PVDF-Graphene Nanocomposite Coatings for Electromagnetic Wave Absorption” (authors: A.G D’Aloia, H.C Bidsorkhi, A. Tamburrano, G. De Bellis, M.S. Sarto).
7. *Speaker* at 2019 Graphene, June 25-28, 2019, Roma, Italy.  
Scientific contribution “3D Porous Graphene-Based Double Polymeric Networks for Controlled Drug Delivery”.
8. *Speaker* at 2018 IEEE Nano 2018, July 2018, Cork, Ireland.  
Scientific contribution “Porous Graphene based PVDF Aerogel Composite for Sweat Sensing Applications” (authors: A.G D’Aloia, H.C Bidsorkhi, A. Tamburrano, G. De Bellis, M.S. Sarto).
9. *Speaker* at Advanced Materials Research journal at International Conference on the Science and Engineering of Materials 2013 (ICoSEM2013), Malaysia.  
Scientific contribution “Effect of Sepiolite on Mechanical and Flammability Properties of Ethylene Vinyl Acetate Nanocomposite” (authors: H. C. Bidsorkhi, Z. Mohamad). The paper was awarded with the Best Paper Award.

10. *Speaker* at International Journal of Chemical Engineering and Applications at International Conference on Chemical Science and Engineering (ICCSE). December 2013, Malaysia.  
Scientific contribution “Effect of Sepiolite on Thermal and Mechanical Properties of Ethylene Vinyl Acetate Nanocomposite” (authors: 16. H. C. Bidsorkhi, Z. Mohamad, E. Halakoo).
11. *Speaker* at Advanced Materials Research Vol. 684 (2013) pp 75-79, April 2013, Malaysia.  
Scientific contribution: “Processing, Thermal Behavior and Tensile Properties of PLA/Thermoplastic Starch/Montmorillonite Nanocomposites”. (authors: E. Jalalvandi, T. Ghanbari, H. C. Bidsorkhi, E. Zeimaran)

Dr. Hossein Cheraghi Bidsorkhi has been:

- *Session Chair* at IEEE 20 th International Conference on Environment and Electrical Engineering, Madrid, Spain, 2020.
- *Session Chair* at IEEE 19th International Conference on Environment and Electrical Engineering, Genova, Italy, 2019.
- Referee member of competition - Iranian Chem-E-Car, Electrical and Chemical Robots competition, Zarrinshahr Education Department, Iran, 2008.

#### VII.D – Editorial and Review Activity for International Scientific Journals and Organizations

Dr. H.C. Bidsorkhi has been/is **Guest Editor** of:

- Special Issue "*Graphene-Based Strain and Pressure Sensors*", Sensors (ISSN 1424-8220), MDPI-  
Deadline for manuscript submissions: 28 February 2022
- Special Issue "*Synthesis, Modeling and Characterization of Graphene, Graphene based Nanocomposites and Nanostructured Materials*", Materials (ISSN 1996-1944), MDPI –  
Deadline for manuscript submissions: 20 December 2021
- Special Issue "*Nanostructured Materials and Graphene Based Nanocomposite Coatings on Flexible Surface*", Coatings (ISSN 2079-6412), MDPI  
Deadline for manuscript submissions: 21 December 2021

Dr. H.C. Bidsorkhi is a **Reviewer** for the following peer-reviewed international Journals:

- *IEEE Transactions on Nanotechnology* (Impact Factor: 2.196), IEEE
- *Polymer Testing* (Impact Factor: 3.275), Elsevier
- *Separation and Purification Technology* (Impact Factor: 5.774), Elsevier
- *Materials Today* (Impact Factor: 26.416) Elsevier
- *Carbon* (Impact Factor: 8.821), Elsevier
- *Progress in Organic Coatings* (Impact Factor: 4.469), Elsevier
- *Composites Part B* (Impact Factor: 7.635), Elsevier
- *Polymer Composites* (Impact Factor: 2.265), Wiley

- *Journal of Materials Science* (Impact Factor: 3.553), Springer
- *Sensors* (Impact Factor: 3.275), MDPI

## VII.E – Organization of International Conferences

Dr. H.C. Bidsorkhi has been **member of the Local Organizing Committee** of the following International Conference:

- *IEEE International Conference on Nanotechnology, IEEE NANO 2015*, Rome, Italy, 27-31 July 2015
- *IEEE 19th International Conference on Environment and Electrical Engineering, Genova, Italy, 2019*

Dr. H.C. Bidsorkhi has been **member of the Organizing Committee** of the following International Conferences and Symposia:

- *Scholars International Conference on Catalysis and Chemical Engineering, 20-21 Jun 2022 | Berlin, Germany | CATCHEM.*
- *IEEE 20th International Conference on Environment and Electrical Engineering, Madrid, Spain, 2020.*

Dr. H. C. Bidsorkhi has collaborated in the organization of the **Exhibition** of the International Conference *IEEE NANO 2015*, supporting the management of the aspects concerning the exhibition, including relations with companies and organization. In particular, more than 30 industrial companies took part at the exhibition, all dealing with nanotechnologies.

## Part VIII – Summary of Scientific Achievements

### VIII.A - Database

| Product type [international] | Number | Data Base | Start | End  |
|------------------------------|--------|-----------|-------|------|
| Documents                    | 23     | Scopus    | 2014  | 2021 |
| Conference Papers            | 6      | Scopus    | 2014  | 2021 |
| Peer-review Articles         | 16     | Scopus    | 2014  | 2021 |
| Books chapters               | 1      | Scopus    | 2014  | 2015 |

All the articles have been published on:

- *Sensor*, MDPI (I.F. 3.572)
- *IEEE Transactions on Nanotechnology*, IEEE (I.F. 2.57)
- *Journal Of Materials Science*, springer (I.F. 4.22)
- *Polymers*, MDPI (I.F. 4.32)
- *Separation And Purification Technology*, Elsevier (I.F. 7.312)\* Ranking it 16 out of 143 in Engineering, Chemical
- *Macromolecular Materials and Engineering*, Wiley (I.F. 4.367)
- *Progress in Organic Coatings*, Elsevier (I.F. 5.61)

- Materials Today Communications, Elsevier (I.F. 3.383)
- Polymer, Elsevier (I.F. 4.430)
- Polymer Testing, Elsevier (I.F. 4.282)
- Polymer Composites, Wiley (I.F. 3.171)
- Nanotechnology, IOPscience (I.F. 3.874)
- Scientific Reports, Nature (I.F. 5.133)

|                                      |                     |
|--------------------------------------|---------------------|
| <b>Total Impact factor</b>           | <b>55.92</b>        |
| <b>Total Citations</b>               | <b>402 (Scopus)</b> |
| <b>Average Citations per Product</b> | <b>11</b>           |
| <b>Hirsch (H) index</b>              | <b>11 (Scopus)</b>  |

### VIII.B – Publication List

#### *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. 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.
6. 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.
7. 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.
8. 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.

9. M. Mehrpouya, H. C. Bidsorkhi. "MEMS Applications of NiTi Based Shape Memory Alloys: A Review" **Micro and Nano systems**, 2016.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. H. Adelnia, J. N. Gavgani, 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.
16. 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.

*Journal paper under review:*

1. A.G. D'Aloia, H.C. Bidsorkhi, G. De Bellis, M.S. Sarto, "Graphene Based Wideband Electromagnetic Absorbing Textiles at Microwave", IEEE Trans. on EMC, *Accepted with minor revision*
2. H. C. Bidsorkhi, A. G. D'Aloia, N. Framarzi, L. R. Ballam, A. Tamburrano, G. De Bellis, M. S. Sarto "Green mask sensor monitored the human reparation ", Sensors and Actuators A, *under submission*
3. H. C. Bidsorkhi, L. R. Ballam, A. G. D'Aloia, A. Tamburrano, M. S. Sarto "Flexible Graphene-Based Polymer Nanocomposite Films for Sweat Monitoring Applications. ", Advanced Healthcare Materials, *under submission*

*Book Chapters:*

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

*Conference Proceedings:*

1. 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.
2. “Antimicrobial Coating Innovations to Prevent Infectious Diseases” invited as expert on Nano-coating, COST AMiCI, Poland, Feb 2020
3. 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.
4. 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.
5. “Antimicrobial Coating Innovations to Prevent Infectious Diseases” invited as expert on Nano-coating, COST AMiCI, Greece, Sep 2019
6. “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
7. 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.
8. 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).
9. “Enhancement of Mechanical and Thermal Properties of polymer Composite Based on Nanofiller” Department of Material and Nanotechnology, Sapienza University of Rome, May 2018
10. 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
11. 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).
12. “Development of and Polymer and Nanostructured Material” The National Research Council (CNR), Napoli, Italy, Nov 2017

13. 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).
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', ET 2015, June 2015, Genova (Italy).
15. 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
16. 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.
17. 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.
18. 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.

#### VIII.C - Patents

1. "Rivestimento antimicrobico multistrato rimovibile resistente all'acqua per superfici da contatto e suo metodo di preparazione" 2021, N.D:102021000000848. Contribution: devised, manufactured, characterized, wrote.
2. "Sensore elettrochimico di sudore indossabile e flessibile costituito da membrana in composito polimerico contenente grafene." 2021, N.D: 102021000019073. Contribution: designed, built, evaluated, wrote.

#### Part IX– Selected Publications

1. H. C. Bidsorkhi, A. G. D'Aloia, A. Tamburrano, G. De Bellis, M. S. Sarto. "Waterproof Graphene-PVDF Wearable Strain Sensors for Movement Detection in Smart Gloves" **Sensors**, 21.16 (2021): 5277. MDPI, 2021. **Impact factor: 3.572**

*The main scientific contribution of the candidate regards the design, production, morphological and electrical characterization of the material, as well as the study of the possible application as sensor.*

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**, 9, 15719 (2019), 31 October 2019.

**Impact factor: 5.133**

*The main scientific contribution of the candidate regards the production, morphological, wettability, mechanical, thermal, electrical and electromagnetic characterization of the material, together with Prof. A. Tamburrano and Dr. A.G. D'Aloia.*

3. H. C. Bidsorkhi, A. G. D'Aloia, G. De Bellis, A. Proietti, A. Rinaldia, M. Fortunatoa, P. Ballirano, P. Braccialeb, L. Santarellib, M. S. Sarto. “Nucleation Effect of Unmodified Graphene Nanoplatelets on PVDF/GNP Film Composites” **Materials Today Communications**, Volume 11, June 2018, Pages 163-173, 2018.

**Impact factor: 3.383**

*The main scientific contribution of the candidate regards the design, production, morphological, mechanical characterization and scientific discussion*

4. 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**, Volume: 17 , Issue: 5 , Sept 2018.

**Impact factor: 2.57**

*The main scientific contribution of the candidate regards the design and production of the material, as well as the results discussion and organization, analysis of materials morphology.*

5. 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**, Volume 10, Issue, 1, 10.3390/polym10010082, January 2018.

**Impact factor: 3.164**

*The candidate contributed to the analysis and discussion of electrical, electromechanical, and mechanical data with respect to the state of art, especially considering the different solvents used.*

6. 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**, Volume 27, Number 41, September 2017.

**Impact factor: 3.874**

*The main scientific contribution of the candidate regards the design and production of biocompatible membranes, as well as the result analysis and discussion. All calculations and graphs were processed by the candidate.*

7. H. C. Bidsorkhi, H. Adelnia, R. H. Pour, M. Soheilmoghaddam “Preparation and characterization of ethylene-vinyl acetate/halloysite nanotube nanocomposites ” **Journal of Materials Science**, 50(8), 3237-3245. Springer US, 2015.

**Impact factor: 4.22**

*The main scientific contribution of the candidate regards the design and production of a new biodegradable composite, as well as the result analysis and discussion. All calculations and graphs were processed by the candidate.*

8. 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**, 146, pp.351-357. Elsevier, 2015.

**Impact factor: 7.312 (\* Ranking 16 out of 143 in Engineering, Chemical)**

*The candidate contributed to design and production of a new biocompatible membrane, discussing the obtained material performances with respect to the state of art. He carried out all the calculations and drawn up all the graphs.*

9. 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**, Volume 37, August 2014, Pages 117-122. Elsevier, 2014. **10 top most cited paper in Polymer Testing**

**Impact factor: 4.282**

*The main scientific contribution of the candidate regards the design and production of new biodegradable composites, as well as the study and writing of the result, discussion and possible applications. All calculations and graphs were processed by the candidate.*

10. 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**, Volume 55, Issue 14, 19 June 2014, Pages 3130-3138, 2014.

**Impact factor: 4.43**

*The main scientific contribution of the candidate regards the analysis of effect of graphene on biodegradable nanocomposites, as well as the writing of the result and discussion. All graphs were processed by the candidate.*

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**

*The main scientific contribution of the candidate regards the material design, production, morphological, electrical and electromechanical characterization together with Prof. A. Tamburrano, as well as the result analysis and discussion.*

12. 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.

*The main scientific contribution of the candidate regards the design and production of the material, as well as the study and writing of the result, discussion and possible applications. All calculations and graphs were processed by the candidate.*