Curriculum Vitae

Name:
Abdul Moqeet Hai
Nationality:
Pakistani
Date of Birth:
January 01, 1988
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EDUCATION:

PhD in Materials Science 2017 – date
University of Wollongong, Australia
Thesis title: Advanced biofabrication of functional silk fibroin hydrogels for tissue engineering applications
Highlights: Electrowriting (electrospinning + 3D printing) and fabrication of hybrid silk/graphene neural recording microelectrodes

MS Polymer Technology (3.75/4.00) 2015 – 2017
University of the Punjab, Lahore Pakistan
Highlights: Polymer synthesis and characterization techniques, graphene synthesis and thermal reduction

MS in Textile Engineering (3.45/4.00) 2010 – 2012
National Textile University, Faisalabad Pakistan
Highlights: Medical textiles and characterization techniques, comfort properties of different yarn constructions

BSc Textile Engineering 2005 – 2009
National Textile University, Faisalabad Pakistan

RESEARCH EXPERIENCE:

University of Wollongong, Australia (Supervisor: **Prof Gordon Wallace**)

- Electrowriting (additive manufacturing) of silk fibroin aqueous solution
    - Preparation and rheological characterization (rotational and oscillatory rheology) of silk fibroin inks
    - Optimization of 3D printing parameters such as ink concentration, flow rate, collector/nozzle translational speed
    - Writing the G-code, the computer numerical programming language for computer-aided manufacturing through electrowriting

- Silk fibroin/graphene hybrid microelectrodes for neural recording
    - Wet spinning of graphene oxide fibers and subsequent reduction
    - Coating of silk fibroin solution on graphene fibers using electrocompaction
    - Characterization: cyclic voltammetry, electrochemical impedance spectroscopy, mechanical compliance and coating stability in phantom brain
- Molecular structure – mechanical performance relationship in physically crosslinked Silk fibroin hydrogels
    - Molecular structure characterization through deconvolution of FTIR spectra and wide-angle X-ray scattering
    - Control over molecular structure of silk fibroin to tailor mechanical properties and biodegradability

University of the Punjab, Pakistan (Supervision: **Prof. Tahir Jamil**)

- Electro-conductive polyester nonwoven fabric for applications in biosensors
    - Synthesis of graphene oxide (GO) nanoparticles
    - Thermal reduction of GO on nonwoven polyester fabrics
- Fabrication of jute reinforced soymilk based Bio-composites
- Characterization of Antibacterial property of kapok fibers treated with chitosan/AgCl-TiO_2 colloid

National Textile University, Pakistan (supervision: **Prof. Tanveer Hussain**)

- Moisture management properties of knitted fabrics including wettability
- Comfort properties of fabrics
- Development of an automatic system for removal of contamination from natural fiber processing

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WORK EXPERIENCE

Lab Demonstrator (part time)
University of Wollongong, Australia
Role: Lab demonstrations and tutoring for engineering students in school of chemistry

Assistant Professor (On Study Leave) 2014 – date
Institute of Polymer & Textile Engineering
University of the Punjab, Lahore Pakistan

- Teaching undergrad students and research

Lecturer 2013 - 2014
National Textile University, Faisalabad Pakistan

- Teaching undergrad students and research

Research associate 2011 – 2012
National Textile University, Faisalabad Pakistan

- Worked on a project to engineer and intelligent contamination sorter system for cotton industry

Assistant Manager
Nishat Chunian Ltd, Lahore Pakistan

BIOMATERIAL CHARACTERIZATION SKILLS

- Spectroscopic characterizations: Fourier transform infrared spectroscopy (FTIR), nuclear magnetic resonance (NMR), circular Dichroism (CD), UV spectroscopy, wide-angle X-ray scattering (WAS), X-ray photoelectron spectroscopy (XPS), Raman spectroscopy
- Morphological: Scanning electron microscopy (SEM) and optical microscopy
- Mechanical and thermal analysis: tensile tests, thermo gravimetric analysis (TGA) and disc scanning calorimetry (DSC)
- Polymer Rheology: rotational and oscillatory
- Electrochemical characterization: Cyclic Voltammetry (CV) and electrochemical impedance spectroscopy (EIS)
- Antibacterial properties of textiles
- Wettability and moisture management of textiles

GRANTS AND FUNDING

Pakistan – United States science and technology cooperation program

2016 – 2017

Based in University of the Punjab, Lahore and in collaboration with North Carolina State University, USA

Project Title: Research collaboration between Pakistan and United States on development of innovative technical textiles and medical textiles products

Development of novel composite wound dressing for wound are applications

2016

Based in University of the Punjab, Lahore

Antibacterial treatment of Kapok fibers for biomedical applications

2015

Based in University of the Punjab, Lahore

Development of an intelligent contamination sorter system for cotton fiber processing industry 2010 – 2012

Based in National Textile University Faisalabad

SELECTED AWARDS AND RECOGNITIONS

- **UOW 3MT thesis Final 2020,** 2nd Place award (Title: An electrifying solution to unnerving problems). https://electromaterials.edu.au/2020/08/19/abdul-moqeet-hai-awarded-runner-up-at-the-uow-2020-3mt-final/
- **AIIM 3MT thesis competition 2020, 1st Prize** (University of Wollongong, Australia)
- University of Wollongong, **Global challenge 2019 travel Award**
- Member of ARC center of excellence in electro-materials science, Australia
- ACES top up scholarship award, University of Wollongong Australia
- University of Wollongong postgraduate tuition fee scholarship
- President Spinning society in National Textile University

TEACHING AND RESEARCH INTERESTS

- Additive manufacturing; 3D printing and electrowriting
- Biomaterials and biopolymers for biosensor applications
- Protein fibers (silk fibroin and collagen)
- Polymer synthesis and characterization
- Medical textiles technology (yarn manufacturing, knitting, nonwovens)
- High performance fibers

PUBLICATIONS

1. Electrowriting of Silk Fibroin: Towards 3D Fabrication for Tissue Engineering Applications (In progress, out of PhD research)
2. Hybrid silk/graphene fibers via electrocompaction: towards high performance neural recording microelectrodes (In progress, out of PhD research)
3. Fabrication of physically cross-linked silk fibroin based transparent hydrogels with tuneable mechanical strength and biodegradability (In progress, out of PhD research)
4. Jabbar A, Tariq U, Hussain T, Basit A, Hai A, Zubair M. Effect of polyester and elastane linear density on the physical and mechanical properties of dual-core-spun cotton yarns. Journal of Natural Fibers. 2018 Aug 24:1-9.
5. Moqeet Hai A, Ahmed M, Afzal A, Jabbar A, Faheem S. Characterization and antibacterial property of Kapok fibers treated with chitosan/AgCl–TiO2 colloid. The Journal of The Textile Institute. 2018 Apr 27:1-5.
6. Riaz T, Ahmad A, Saleemi S, Adrees M, Jamshed F, Hai AM, Jamil T. Synthesis and characterization of polyurethane-cellulose acetate blend membrane for chromium (VI) removal. Carbohydrate polymers. 2016 Nov 20;153:582-91.
7. Jabbar, A., Hussain, T., & Moqeet, A. (2013). Impact of Carding Parameters and Draw Frame Doubling on the Properties of Ring Spun Yarn. *Journal of Engineered Fabrics & Fibers (JEFF)*, *8*(2).
8. Moqeet, A., Jabbar, A., Hussain, T., Ali, Z., & Ul-Haq, Z. (2013). Influence of splicing parameters on retained splice strength, elongation and appearance of spliced cotton/flax blended yarn. *Indian Journal of Fibre & Textile Research*,*38*(1), 74-80.

INTERNATIONAL CONFERENCES

1. Effect of Coupling Agent and Plasticizer on Mechanical Properties and Hydrophobicity of Jute Reinforced Soymilk Based Biocomposites (**AMPT 2016 in Kualalumpur, Malaysia**)
2. Effect of yarn TPI on comfort and performance of fabrics woven from ring spun and rotor spun yarns. (**15th AUTEX world textile conference in Bucharest, Romania**)
3. Simulation and optimization of the channel design of a foreign fibre detection device in spinning mill. (**14th AUTEX world Textile Conference in Bursa, Turkey**).

Poster Presentations

1. Electro-writing of silk fibroin for tissue engineering applications (**ACES Full center meeting 2019, University of Wollongong Australia**)

REFREES

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