PERSONAL INFORMATION

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Sex Male | **Date of birth** 18/12/1981 | **Nationality** Egyptian

Summary

Enthusiastic Researcher, graduated from North Carolina State University, USA, in 2013. Postdoctoral experience (3 years), working on nanoparticles from metals and biopolymers. Solid experience in **preparation and characterization of nanoparticles and nanofibers.** Eager to pursue teaching career in undergraduate level

Highlights

- Actively seeking postdoctoral position in the USA.
- Interested in finding new applications of nanomaterials as bio-sensors
- Advanced chemical research
- Trained to use IR, H-NMR, SEM, TEM, TGA, DSC, QCM, SPR, and particle size measurements techniques
- Background in organic chemistry synthesis
- Chemical modification of polymers with focus on polysaccharides and biopolymers
- Metal nanoparticles green synthesis and charachterization
- Polymer nanoparticles for drug delivery
- Drug Release measurements
- Polymer nanofibers via electrospinning
- Antimicrobial finishing for textiles
- Antimicrobial testing and evaluation

CURRENT POSITION

Researcher
National Research Centre, Textile Research Division, Egypt.

WORK EXPERIENCE

1 August 2013 – 5 May 2016
Post-doctoral Fellow
Department of Forest Biomaterials, North Carolina State University, USA

11 May 2013 – 30 July, 2013
Post-doctoral Fellow
Fiber and Polymer Science Program, College of Textiles, North Carolina State University, USA

January 2009 – May 2013
Research Assistant
PhD graduate student, Fiber and Polymer Science Program, College of Textiles, North Carolina State University, USA

March 2006-December 2009
Assistant Researcher

Pre-Treatment and Finishing of Cellulosic Fibre, Textile Research Division, National Research Centre, Egypt.

May 2004-February 2006
Research Assistant
Pre-Treatment and Finishing of Cellulosic Fibre, Textile Research Division, National Research Centre, Egypt.

Oct 2003-Jan 2006
Chemist
Textile Research Division, National Research Centre, Egypt

EDUCATION

2009- 2013
PhD. Fiber and Polymer Science
Fiber and Polymer Science Program, College of Textiles, North Carolina State University, USA
Title: "*The Use of chitosan in The Formation of Silver Nanoparticles, Chitosanic Nanoparticles and Fibrous Structures*"

2004- 2006
MSc. Chemistry
Faculty of Science, El-Minufiya University, Minufiya, Egypt & National Research Centre, Textile Research Division, Egypt.
Title: "*Electrocatalytic oxidation of rice starch using mixed oxidant generated via titanium/rhodium thermally activated modified electrode*"

August 2003- Jun 2004
Pre-Master, Chemistry **Grade: Very Good**
Faculty of Science, El-Minufiya University, Minufiya, Egypt.

Sept.1999- May 2002

B.Sc., Chemistry **Grade: Very Good**

Faculty of Science, El-Minufiya University, Minufiya, Egypt.

General Chemistry, Physical Chemistry , Inorganic Chemistry , Organic Chemistry , Analytical Chemistry , Bio- Chemistry , Petroleum Chemistry, industrial chemistry, Cellulose Chemistry , Spectroscopy, Heterocyclic compounds, Chemistry of Macromolecules, Physics, Biology, Mathematics, English, Computer.

ACCOMPLISHMENTS

1. Joined the National Research Centre in Cairo, Egypt in 2003 (largest research institute in the Middle East)
2. Was selected as a team leader in the national campaign of improving the textile industry in Egypt, 2004
3. Served as the scientific coordinator for the first, second and third annual conferences of the Textile Research Division, National Research Centre, Egypt, which were held in 2005, 2006, and 2007
4. In 2007, was awarded a 6 month travel grant to the College of Textiles, United States for academic training. Worked on Preparation of Silver Nanoparticles Using Natural Polymers"
5. In 2008 Awarded a PhD scholarship from the Egyptian Ministry of Higher Education to study in the United States
6. In February 2013 cosponsored a workshop at Luma Lenda Medical School, California, USA, on Applications of Nanofibers and Nanoparticles in Medicine"
7. Successfully completed the teaching techniques program (summer camp) at North Carolina State University, summer 2014
8. Senior researcher in several projects funded from National Institute of Health, NIH, USA
9. Collaborative Research with the industry in the USA, such as Eastman chemicals, Domtar, and United Soybean Board.
10. Member of the American Chemical Society (ACS). Attended three consecutive conference meetings on 2014, 2015, and 2016

EXPERIENCE

1. Senior Researcher of project funded from United Soybean Board (Domestic program) related to the surface finishes from soy protein. The project deals with surface modifications of polypropylene nonwovens for antibacterial/haemostat applications. **PI Prof. Orlando Rojas - Department of Forest Biomaterials, NCSU, Raleigh, NC - Jan 2015 to May 2016).**
2. Member of the product development team in a project funded from Domtar to develop new products based on Lignin polymer. Developed new antibacterial/antiodor nanofibers membranes based on lignin and cellulose acetate. **PI Prof. Orlando Rojas - Department of Forest Biomaterials, NCSU, Raleigh, NC - Jan 2014 to Dec 2014).**
3. Member of a project related to Developing New Products and Applications for Cellulose Acetate funded from Eastman Chemicals. **PI Prof. Orlando Rojas - Department of Forest Biomaterials, NCSU, Raleigh, NC (Sep. 2013 to Dec 2013)**

4. Worked on a short-term project funded from NCSU and LUNA Corporation for Electrospinning of Alginate and Chitosan for preservation of bacterial samples collected from the field (cotton swap principle). **PI. Prof. Samuel Hudson - Department of Textile Chemistry, Science and Technology, NCSU, Raleigh, NC – (May. 2013 to August 2013)**
5. Acquired numerous skills and experience while being a graduate research assistant in the Fiber and Polymer Science PhD Program at North Carolina State University, Raleigh, North Carolina, USA. (Jan 2009 to May 2013)
   - ✓ Studied polymer chemistry and engineering in details, through different courses and classes, with special focus on biopolymers and its applications
   - ✓ Well trained on fabrication of metal nanoparticles using protective polymer shells and their characterization using UV-visible measurements and Transmission Electron Microscope.
   - ✓ Experience with fabrication of nanofibers from different types of polymers using electrospinning techniques and their characterization using Electron Scanning Microscope.
   - ✓ Good hand skills in chemical modifications of natural polymers and characterization using IR, H-NMR, Mass spec, and X-RD techniques.
   - ✓ Good knowledge about using Quartz Crystal Microbalance with Dissipation Monitoring (QCM-D) and Surface Plasmon Resonance (SPR) to monitor protein absorption on polymers surfaces.
   - ✓ Applied new cross-linking agent for the preparation of chitosan nanoparticles for drug delivery applications.
   - ✓ Experience with Dynamic Light Scattering (DLS) technique for evaluation of average size and surface charge of polymeric nanoparticles.
   - ✓ Strong Experience in antibacterial testing for films, fabrics, and nanofiber mats.
   - ✓ Trained junior and master level graduate students and chemists on electrospinning technique and antibacterial testing.
   - ✓ Wrote technical papers and reports for a project entitled "Preparation of starch nanoparticles using microemulsion technique for pharmaceutical and paper industries"
6. Developed industrial experience through communication with scientists and engineers on conducting analysis of research projects for continues two years in the National Campaign for Development of Textile Industry in Egypt" with focus on improved formulas and processes to replace the synthetic polymer with more save natural polymers in fabric preparations and finishing (Jun 2006 to Dec 2008)
7. Launched products from concept stage to commercial release in textile finishes (Antimicrobial Finishing Materials for Textiles) - (Jan 2006 to May 2006)
8. Developed new technique to modify starch using electrocatalytic means for regular textiles pre-treatment and finishing. (Jan 2004 to Dec 2005)
9. Employed chromatography, spectroscopy and spectrophotometry techniques in characterization of natural polymers and cellulosic based textiles. (Oct 2003 to Dec 2003)

CONFRENCES

1. International Conferences of Textile Research Division (Textile Processing: State of the Art & Future Developments), NRC, Dokki-Egypt, 2004
2. The 1st Euro-Mediterranean Textile & Clothing Supply Chain Integration Conference, 9th to 11th May 2005, Cairo, Egypt
3. International Conferences of Textile Research Division (Textile Processing: State of the Art & Future Developments), NRC, Dokki-Egypt, 2005
4. International Conferences of Textile Research Division (Textile Processing: State of the Art & Future Developments), NRC, Dokki-Egypt, 2006
5. The international Conference of Medical Textile "Tex-13", 11th to 13th May 2013, Raleigh, North Carolina, USA
6. 243th American Chemical Society Conference March 25-29, 2012, San Diego, California, USA
7. 249th American Chemical Society National Meeting, March 15-19, 2015, Denver, Colorado, USA
8. 251th American Chemical Society National Meeting, March 13-17, 2016, San Diego, California, USA

PUPLICATIONS

1. **Abdelgawad, A. M.**, S. M. Hudson and O. J. Rojas (2014). "Antimicrobial wound dressing nanofiber mats from multicomponent (chitosan/silver-NPs/polyvinyl alcohol) systems." Carbohydrate polymers **100**: 166-178.
2. **Abdelrahman Abdelgawad**, M. E.-N., Samuel Hudson, and Orlando Rojas (2016). "Fabrication and characterization of bactericidal thiol-chitosan and chitosan iodoacetamide nanofibres." International Journal of Biological Macromolecules Accepted.
3. Crofton, A. R., S. M. Hudson, K. Howard, T. Pender, **A. Abdelgawad**, D. Wolski and W. M. Kirsch (2016). "Formulation and characterization of a plasma sterilized, pharmaceutical grade chitosan powder." Carbohydr Polym **146**: 420-426.
4. Mehrez El-Naggar, **A. Abdelgawad**, Carlos Salas, Orlando Rojas (2016). "Curdlan in fibers as a carrier of tetracycline hydrochloride: controlled release and antibacterial activity." Carbohydrate polymers Accepted.
5. Shaarawy, H. H., S. M. El-Rafie, **A. M. Abd El-Ghaffar** and M. H. El–Rafie (2009). "Electrocatalytic oxidation of rice starch using mixed oxidant generated via titanium/rhodium thermally activated modified electrode: Part (I)." Carbohydrate Polymers **75**(2): 208-213.
6. Shaarawy, H. H., S. M. El-Rafie, **A. M. Abd El-Ghaffar** and M. H. El–Rafie (2013). "Electrocatalytic oxidized starch as sizing and finishing agent." Egyptian journal of chemistry **56**(1): 49-59.
7. Shaheen, T. I., M. E. El-Naggar, **A. M. Abdelgawad** and A. Hebeish (2016). "Durable antibacterial and UV protections of in situ

synthesized Zinc oxide nanoparticles onto cotton fabrics." International journal of biological macromolecules **83**: 426-432.

8. Yan, J., **A. M. Abdelgawad**, M. E. El-Naggar and O. J. Rojas (2016). "Antibacterial activity of silver nanoparticles synthesized In-situ by solution spraying onto cellulose." Carbohydrate Polymers **147**: 500-508.

9. **Abdelrahman M. Abdelgawad**; Mehrez E. El-naggar; Wael Eissa; and Orlando J. Rojas **(2016) Accepted**. http://dx.doi.org/10.1016/j.jclepro.2016.12.122 Cleaner and Large Scale Production of Silver Nanoparticles Mediated by Soy Protein Via Solid State Synthesis. Journal of Cleaner Production