Mohammed Alsawafta

Assistant Professor of Physics
Department of Mathematics & Natural Sciences
American University of Kuwait, Kuwait
Tel: 2224 8399, ext. 3730, malsawafta@auk.edu.kw

Profile

- PhD in Applied Physics (Nanotechnology)
- Experienced in Nanotechnology and thin film techniques
- Scientific referee in Photonics, Nanotechnology and thin film applications
- Experienced teacher at University level
- Strong management and communication skills

Education

- **Ph.D in Applied Physics** **2012**

Concordia University, Montreal, Quebec

Cumulative Grade Point Average 4/4.3

- **Master in Applied Physics** **2007**

Hashemite University, Jordan

Cumulative Grade Point Average 3.83/4

- **High diploma in Physics education** **2001**

University of Jordan, Jordan

- **Bachelor in Physics** **1999**

University of Jordan, Jordan

Languages

Fluent in English, Arabic and functional French

Research/Teaching expertise

❖ **Assistant professor,** American University of Kuwait, Kuwait **August 2014-Present**

- Teaching Physics courses (Mechanics, Electromagnetism, Astronomy and Environmental Physics) for undergraduate students

- Active member in many service committees (College Assessment Committee, College Curriculum Committee)
- Conducting research in both theoretical and experimental aspects of Nanotechnology
  - Modeling the optical properties of metallic nanoparticles for photonics applications
  - Synthesis and characterize of both WO_3 and V_2O_5 thin films for electrochromic devices

❖ **Postdoctoral fellow**, Concordia University, Montreal, Quebec **2012-2014**

- Synthesis of WO_3 thin films for electrochromic devices
- Modeling the optical properties of metallic nanoparticles for photonics applications
- Synthesis metallic-polymer nanocomposite materials for biosensing applications
- Supervising CÉGEP students in the nanotechnology labs as part of a project with college Ahuntsic

❖ **Research assistant**, Concordia University, Montreal, Quebec **2008-2012**

- Modeled the optical properties for metallic nanoparticles for solar cell industry
- Synthesis metallic-polymer nanocomposite materials for biosensing and pattering applications.
- Experience in nanotechnology/photonics/optical-bio-microsystem labs in both Concordia University and Université du Québec

❖ **Teaching assistant**, Concordia University, Montreal, Quebec **2008-2012**

- Senior Physics Lab Instructor for Atomics, Mechanics, Electromagnetism, and Optics labs
- Managed physics lab for undergraduate students
- Graded lab reports and finalizing grades

❖ **Research assistant**, Paris-Sud University, CLIO, Orsay ville, France **2006-2007**

- Developed a new method of infrared mico-spectroscopy for biological applications by using a system of fiber optics and a free electron laser

❖ **High school teacher**, Ministry of education, Jordan **1999-2006**

- Taught Physics and mathematics
- Created Ministry of education's final exams in Physics nationwide
- Graded final exams in science nationwide

Specialized skills

❖ **Research skills**

- Photonics
- Nanotechnology (thin films)
- Synthesis of metallic nanoparticle and nanocomposite materials
- Cleanroom environment
- Electrochromic materials
- Thin film deposition techniques

❖ **Computer skills**

- Discrete Dipole Approximation (DDA)
- C and C++ languages
- Microsoft office
- Sigmaplot (scientific data analysis and graphing software)

❖ **Technical skills**

- Structural characterization techniques: TEM, SEM, AFM, XRD and FTIR
- Spectroscopic characterization of materials by using UV-Vis-NIR spectrometer
- Electrochromic measurements of thin films

Publications and conferences

❖ **Peer reviewed papers**

1. Phuriwat Jittiarporn, Simona Badilescu, **Mohammed Alsawafta**, Lek Sikong, Vo-Van Truong, Electrochromic Properties of Sol-Gel Prepared Hybrid Transition Metal Oxides : A Short Review, Journal of Science: Advanced Materials and Devices-Elsevier (2017), doi: 10.1016/j.jsamd.2017.08.005.

2. Afaf Almoabadi, **Mohammed Alsawafta**, Simona Badilescu, Victor Stancovski, Tanu Sharma, Ralf Brüning, Vo-Van Truong, Sub-zero temperature dip-coating of sol-gel vanadium pentoxide. Effect of the low-temperature deposition on the structure, morphology and electrochromic properties of the film, Journal of Nanomaterials. 2016, 4595869.

3. **Mohammed Alsawafta**, Afaf Almoabadi, Simona Badilescu, and Vo-Van Truong, Improved electrochromic properties of vanadium pentoxide nanotubes prepared through the thermal treatment of sol-gel dip-coated thin films. Journal of The Electrochemical Society, 2015, 162 (7),H466-H472

4. **Mohammed Alsawafta,** Mamoun Wahbeh, Vo-Van Truong, Investigation of the validity of the universal scaling law on linear chains of silver nanoparticles, Journal of Nanomaterials.2014, 983413

5. Youseef Mosaddeghian Golestani, **Mohammed Alsawafta,** Simona Badilescu, Victor Stancovski, and Vo-Van Truong, Microstructure and electrochromic properties of nanostructured tungsten oxide thin films prepared by the vacuum filtration and transfer method, Journal of The Electrochemical Society, 2014,161, H909-H916

6. **Mohammed Alsawafta,** Youseef Mosaddeghian Golestani, T. Phonemac, Simona Badilescu, Victor Stancovski, and Vo-Van Truong, Electrochromic Properties of Sol-Gel Synthesized Macroporous Tungsten Oxide Films Doped with Gold Nanoparticles. Journal of The Electrochemical Society, 2014, 161, H276-H283

7. **Mohammed Alsawafta**, Simona Badilescu, Vo-Van Truong and Muthukumaram Packirisamy, Growth of Gold Crystals under the Presence of Bubbles Trapped under the Surface of Gold –Poly (vinyl alcohol) Nanocomposite Films. Progress in Nanotechnology and Nanomaterials.2013, 3, 69-76

8. **Mohammed Alsawafta**, Simona Badilescu, Vo-Van Truong and Muthukumaram Packirisamy, Effect of hydrogen nanobubbles on the morphology of gold – gelatin bionanocomposite films and their optical properties. IOP_Nanotechnology .2012, 23, 065305

9. **Mohammed Alsawafta**, MamounWahbeh and Vo-Van Truong, Theoretical study of optical properties of metallic ellipsoidal nanoparticles by discreet dipole approximation. Journal of Nanomaterials.2011, 457968

10. **Mohammed Alsawafta**, Simona Badilescu, Abhilash Paneri, Vo-Van Truong and Muthukumaram Packirisamy, Gold-poly(methyl methacrylate) nanocomposite films for plasmonic biosensing applications. Polymers, 2011, 3(4), 1833-1848

11. **Mohammed Alsawafta**, Mamoun Wahbeh, and Vo-Van Truong, Simulated optical properties of gold nanocubes and nanobars by discrete dipole approximation, Journal of Nanomaterials. 2011. 283230

12. **Mohammed Alsawafta**, Simona Badilescu, Muthukumaram Packirisamy, and Vo-Van Truong, Kinetics at the nanoscale: formation and aqueous oxidation of copper nanoparticles. Reac Kinet Mech Cat.2011, 104,437-450

13. Alexandre Dazzia, Rui Prazeresa, François Glotina, Jean-Michel Ortega, **Mohammed Alsawafta**, and Maria-Angeles de Frutos. Chemical mapping of the distribution of viruses into infected bacteria with a photothermal method. Ultramicroscopy.2008, 108, 635-641

❖ Conference papers

1. Afaf Almoabadi, **Mohammed Alsawafta**, Simona Badilescu, Victor Stancovski, Tanu Sharma, Ralf Brüning and Vo-Van Truong, Electrochromic and electrical properties of layered and tubular vanadium pentoxide thin films. Photonics North 2015, doi: 10.1109/PN.2015.7292513

2. **Mohammed Alsawafta**, Mamoun Wahbeh and Vo-Van Truong, Effect of symmetry breaking and substrate on the optical properties of silver sphere-like nanoparticles in different surrounding media. Proc. SPIE 9288, Photonics North 2014, 92881A; doi:10.1117/12.2086149

3. **Mohammed Alsawafta**, Youseef Golestani, Thanavady Phonemac, Simona Badilescu, Victor Stancovski and Vo-Van Truong. Propriétés électrochromes de films d`oxyde de tungstène macroporeux dopés aux nanoparticules d`or, ACFAS, 2014

4. **Mohammed Alsawafta**, Simona Badilescu, Muthukumaran Pakirisamy and Vo-Van Truong, Effect of the hydrogen bubbles on the morphological features and optical properties of gold-polymer nanocomposites. Nanoquebec Conference.2012

5. **Mohammed Alsawafta**, Hamid SadAbadi, Simona Badilescu, Muthukumaran Pakirisamy, and Vo-Van Truong, Synthesis of stable copper nanoparticle in aqueous solution in a microfluidic reactor. Proc. ICNFA, 2011,63

6. **Mohammed Alsawafta**, Mamoun Wahbeh, Sushil .K. Misra, and Vo-Van Truong, Effect of target size on the optical response of ultrafine metallic spherical particles arranged in a two-dimensional array. Proc. SPIE 8007, 80071H (2011), doi:10.1117/12.905099

7. Mamoun Wahbeh, **Mohammed Alsawafta**, Sushil .K. Misra, and Vo-Van Truong, Optical properties of two-dimensional and three-dimensional arrays of noble metal nanoparticles by the discrete dipole approximation method. Proc. SPIE 8007, 80071I (2011), doi:10.1117/12.905102

Projects and thesis supervision

1. Afaf Almoabadi, M.Sc thesis, Concordia University, 2014
2. Thanavady Phonemac, Annie Xie and Vincent Murphy, CÉGEP project, Concordia University, 2014
3. Youssef Mosaddeghian Golestani, "Electrochromic Properties of Tungsten Oxide Nanoparticles Films Prepared by the Filtration and Transfer Method," M.Sc thesis, Concordia University, 2014
4. Thanavady Phonemac, "Electrochromic Properties of Sol-Gel Synthesized Macroporous Tungsten Oxide Films Doped with Gold Nanoparticles," CÉGEP project, Concordia University, 2013

Training courses and activities

1. Raman spectroscopy, Concordia University, Canada, 2014
2. Profilometer for surface measurements, Université du québec, Canada, 2014
3. Electrochemical analysis, cyclic voltammetry and electrochemical impedance spectroscopy, Concordia University, Canada, 2013
4. Scanning electron microscopy, Concordia University, Canada, 2013
5. X-ray diffraction, Concordia University, Canada, 2013
6. Plasma etching, Concordia University, Canada, 2012
7. Clean room facility, University of Québec, Canada, 2010
8. Dip pen lithography high advanced atomic force microscopy, University of Québec, Canada, 2010
9. Thermal deposition, University of Québec, Canada, 2010
10. Workplace Hazardous Materials Information System, Concordia University, Canada, 2010
11. Chemical vapors deposition, Université du québec, Canada, 2010
12. SigmaPlot - Scientific Data Analysis and Graphing Software, Concordia University, 2009
13. Electron magnetic resonance, Concordia University, 2009
14. UV-VIS-NIR Spectroscopy, Concordia University, 2009
15. Dual polarization interferometer, Concordia University, 2009
16. Miniaturized laser flash photolysis system, Concordia University, 2009
17. Free electron laser, Université Paris-Sud, CLIO, France, 2006
18. Thermal Atomic force microscopy, Université Paris-Sud, CLIO, France, 2006

19. CO_2 laser, Université Paris-Sud, CLIO, France, 2006
20. Comsol multiphysics, Université Paris-Sud, CLIO, France, 2006
21. Kaleida graph, Université Paris-Sud, CLIO, France, 2006

Awards and Scholarships

- Concordia Accelerator Award, 2012
- Concordia Conference and Exposition Award, 2011 and 2012
- International Tuition Fee Remission Award, Concordia University, 2009/2010 and 2010/2011
- Partial Remission Award, Concordia University, 2008/2009
- Arts and Science Graduate Fellowship, Concordia University, 2008/2009, 2009/2010 and 2010/2011
- Concordia Entrance Award, 2008
- Master's research in Nanoscience (Biophysics), Paris-Sud University, France
- First class in Master's degree in Applied Physics, The Hashemite University, Jordan