

Rania Hamed

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Amman-Jordan

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EDUCATION

- 2005-June, 2011: Ph.D. Pharmacy (Pharmaceutics)
The University of Iowa-Division of Pharmaceutics and Translational Therapeutics
Overall GPA: 3.71/4.00
Dissertation: Development of a physiologically-relevant *in vitro* model system to study exhaled bioaerosols
- 2004-2005: Graduate student
The University of Louisiana-Division of Pharmaceutics
Overall GPA: 3.89/4.00
- 2002-2004: M.A. Clinical Chemistry
The University of Scranton-Chemistry Department
Overall GPA: 3.88/4.00
Dissertation: Permeation enhancers of Indomethacin using Franz diffusion cell technique
- 1988-1993: B.S. Pharmacy
Jordan University of Science & Technology
Overall GPA: 3.44/4.00

RESEARCH EXPERIENCE

- 2006-2011: **Graduate Research Assistant**, Advisor: Dr. Jennifer Fiegel
Division of Pharmaceutics and Translational Therapeutics, The University of Iowa
- Research: Develop a more physiologically-relevant *in-vitro* model mimetic of tracheal mucus to study the surface rheology of tracheal mucus and elucidate the mechanism of bioaerosol formation
- Matched the chemical composition, component concentrations, and physicochemical properties (i.e. surface tension and bulk rheology) of the *in-vitro* model mimetic to native tracheal mucus
 - Probed the surface rheology of surfactants adsorbed at the air-mucus interface
 - Elucidated key parameters that control the size distribution of bioaerosols generated from tracheal mucus tract by utilizing an enhanced simulated cough machine
- 2003-2004: **Graduate Research Assistant**, Advisor: Dr. John Deak
Chemistry Department, The University of Scranton
- Research: Permeation enhancers for indomethacin using Franz diffusion cell technique
- Determined conditions for *in-vitro* permeation test using Franz diffusion cell technique
 - Evaluated silicones as new permeation enhancers
 - Differentiated indomethacin permeability through skin obtained from different species
- Summer 2003: **Aventis Scholarship Recipient**
Process Development Department, Aventis Pasteur, Swiftwater, PA
- Determined polysaccharide content using specific assays for phosphorus and sialic acid
 - Determined protein content using Lowry's method
 - Size exclusion and hydrophobic interaction chromatography techniques to further characterize polysaccharide/protein conjugate vaccine candidates

TEACHING EXPERIENCE

- 2006-2011: **Undergraduates Research Assistant**, The University of Iowa
- Supervised three undergraduate students in Chemical and Biochemical Engineering Department during their projects
- 2005-2006: **Teaching Assistant** (2 semesters), The University of Iowa
- Assisted and facilitated about 100 Pharm. D. students in the Pharmacy Practice Laboratory
- 2004-2005: **Teaching Assistant** (2 semesters), The University of Louisiana
- Supervised undergraduate students in the General Chemistry Laboratory
- 2002-2003: **Teaching Assistant** (2 semesters), The University of Scranton
- Supervised undergraduate students in the General Chemistry Laboratory
 - Assisted undergraduate students in the General Chemistry Laboratory through weekly office hours
 - Set up the laboratory for experiments
 - Graded submitted reports and weekly quizzes
 - Taught weekly pre-labs

PROFESSIONAL EXPERIENCE

September 2011-Present:

Assistant Professor, Al-Zaytoonah Private University of Jordan-Faculty of Pharmacy, Amman-Jordan

- 1999-2002: **Director of the Quality Control Department**, Jordan Veterinary and Agricultural Medicinal Industries (JOVET), Amman-Jordan
- Prepared manufacturing records of the Production Department
 - Performed quality assurance programs associated with drug product manufacturing and testing
 - Trained new employees in the Quality Control Department
 - Prepared registration files for pharmaceutical products
 - Implemented current good manufacturing practices (cGMP)
 - Established Quality Assurance Department
 - Developed the quality system (ISO 9000) for JOVET
- 1996-1999: **Director of the Research and Development**, Jordan Veterinary and Agricultural Medicinal Industries (JOVET), Amman-Jordan
- Designed formulations of pharmaceutical products (oral liquids, solutions, suspension & oral gels) for full-scale production under cGMP regulations
 - Developed analytical methods for the pharmaceutical products
 - Conducted stability studies for the pharmaceutical products
- 1993-1996: **Senior Scientist**, RAM Pharmaceutical Industries, Amman-Jordan
- Developed formulations for pharmaceutical dosage forms (tablets, capsules, syrups and suspensions)
 - Worked on developing and validating analytical methods for the pharmaceutical products
 - Conducted pre-formulation studies

ANALYTICAL SKILLS

Bulk rheology:	Determined the viscoelastic properties of complex materials using controlled-stress rheometer
Interfacial rheology:	Determined interfacial viscoelastic properties of surfactants adsorbed at an aqueous Newtonian and a viscoelastic non-Newtonian subphases using an interfacial stress rheometer (ISR)
Surface tension:	Measured surface tension using Wilhelmy plate and du Noüy ring methods.
Laser diffraction:	Determined particle size distribution using laser diffraction technique
Confocal microscopy:	Studied the morphology of lipid phase transition
High performance liquid chromatography (HPLC):	Separated, identified, and quantified mixture of compounds.
Cell Culture:	Cultured neonatal keratinocytes cells
Enzyme-linked immunosorbent assay (ELISA):	Detected covalent proteins adducts

TAUGHT COURSES

Semester	Course No.	Course Name (credit hours)
First 2011-2011	201221	Pharmaceutics I: physical pharmacy (3 credit hours)
	201291	Physical pharmacy laboratory (1 credit hour)
Second 2011-2012	201223	Pharmaceutics II: routes of administration and pharmaceutical dosage forms (2 credit hours)
	201225	Pharmaceutical calculations (1 credit hour)
Summer 2011-2012	201221	Pharmaceutics I: physical pharmacy (3 credit hours)
	201762	Advanced pharmaceutical technology/Graduate level (2 credit hours)
First 2012-2013	201221	Pharmaceutics I: physical pharmacy (3 credit hours)
	201225	Pharmaceutical calculations (1 credit hour)
	201548	Pharmacoeconomics
Second 2012-2013	201223	Pharmaceutics II: routes of administration and pharmaceutical dosage forms (2 credit hours)
	201548	Pharmacoeconomics
	201701	Biostatistics and applications/Graduate level (3 credit hours)
	201494	Practical industrial pharmacy laboratory II
Summer 2012-2013	201221	Pharmaceutics I: physical pharmacy (3 credit hours)
	201223	Pharmaceutics II: routes of administration and pharmaceutical dosage forms (2 credit hours)
	201329	Pharmaceutics laboratory (1 credit hour)
First 2013-2014	201762	Advanced pharmaceutical technology/Graduate level (2 credit hours)
	201223	Pharmaceutics II: routes of administration and pharmaceutical dosage forms (2 credit hours)
	201542	Pharmaceutical technology laboratory (1 credit hour)

HONORS AND AWARDS

Division of Pharmaceutics and Translational Therapeutics Dissertation Fellowship, The University of Iowa-2010
 Graduate College Summer Fellowship, The University of Iowa-2010
 Executive Council of Graduate and Professional Student (ECGPS) Research Grant, The University of Iowa-2010

Division of Pharmaceutics and Translational Therapeutics Travel Award, The University of Iowa-2010, 2008 & 2007.

Women in Science and Engineering Travel Award, The University of Iowa-2009.

Executive Council of Graduate and Professional Student (ECGPS) Scholarly Presentation Award, The University of Iowa-2009.

Graduate Student Senate Travel Fund Award, The University of Iowa-2008.

Division of Pharmaceutics John L. Lach Memorial Scholarship, The University of Iowa-2007.

American Association of Pharmaceutical Scientists (AAPS)-Travel Award 2007.

PUBLICATIONS

J. Fiegel, T. Brenza & R. Hamed. Controlled transport for pulmonary drug delivery. *In: H. Smyth and A. Hickey (eds.) Controlled Pulmonary Drug Delivery: Advances in Delivery Science and Technology*. 2011; pp 143-165. New York: Springer.

Hamed R., Fiegel J. Synthetic tracheal mucus with native rheological and surface tension properties. *Journal of biomedical materials research: Part A* 2013. [In press]

ABSTRACTS & PRESENTATIONS

1. R. Hamed & J. Fiegel. Surface rheological properties of surfactants adsorbed at an air-mucus interface. *International Pharmaceutical Federation's PSWC and the American Association of Pharmaceutical Scientists (AAPS) Annual Meeting*, New Orleans, LA, 2010.
2. R. Hamed & J. Fiegel. Investigating the interfacial rheological properties of surfactants adsorbed at an air-mucus interface of the upper respiratory tract (URT). *James F. Jakobsen Graduate Conference, University of Iowa*, Iowa City, IA, 2010.
3. R. Hamed & J. Fiegel. Development of a more physiologically-relevant mucus mimetic of the upper respiratory tract. *American Institute of Chemical Engineers (AIChE) Annual Meeting*, Nashville, TN, 2009.
4. R. Hamed & J. Fiegel. Evaluating the role of mucus physicochemical properties on bioaerosol formation in the lungs. *James F. Jakobsen Graduate Conference, University of Iowa*, Iowa City, IA, 2009.
5. R. Hamed & J. Fiegel. Investigating the properties of lung mucus: Toward understanding the role of mucus physicochemical properties in bioaerosol formation. *The International Society for Aerosols in Medicine*, Monterey, CA, 2009.
6. R. Hamed & J. Fiegel. Evaluating the role of mucus physicochemical properties on bioaerosol formation in the lungs. *Pharmaceutics Graduate Student Research Meeting*, Purdue University, IN, 2009.
7. R. Hamed & J. Fiegel. Determining key factors that control the formation of pathogenic bioaerosols within the upper respiratory system. *James F. Jakobsen Graduate Conference, University of Iowa*, Iowa City, IA, 2008.
8. R. Hamed & J. Fiegel. Bioaerosol formation from lung surfaces: Evaluating the role of mucus physicochemical properties. *American Association of Pharmaceutical Scientists (AAPS)*, Atlanta, GA, 2008.
9. R. Hamed & J. Fiegel. The role of mucus physicochemical properties in controlling bioaerosol formation within the upper respiratory tract. *Pharmaceutics Graduate Student Research Meeting*, University of Michigan, MI, 2008.
10. R. Hamed & J. Fiegel. Physiologically-relevant cough machine to study bioaerosol formation in the lungs. *American Association of Pharmaceutical Scientists (AAPS)*, San Diego, CA, 2007.

GRANT WRITING EXPERIENCE

- Deanship of Scientific Research , Al-Zaytoonah University of Jordan
Nanoemulsion-based gel formulation for topical drug delivery systems, Funded 2013 (82,170 JD).
- Executive Council of Graduate and Professional Student (ECGPS) Research Grant, The University of Iowa
Investigating the effect of salts on the surface viscoelastic properties of the upper respiratory tract: Towards developing simple aerosols to halt airborne disease transmission, Funded 2010

- Pre-Doctoral Fellowship Program Grant, Parenteral Drug Association (PDA)
Correlating mucus physicochemical properties to bioaerosol formation in the respiratory tract: Towards the development of new infectious disease control strategies, not funded

PROFESSIONAL MEMBERSHIPS

- Technical consultant, Jordan Food and Drug Administration (JFDA), Amman, Jordan; 2012-2013
- Member, Abstracts and Posters Selection Committee, the 14th Jordan Pharmaceutical Conference, Jordan Pharmaceutical Association, Amman, Jordan; 2012
- American Association of Pharmaceutical Scientists
 - Chair of Student Chapter 2009-2010
 - Vice-chair of Student Chapter 2006-2009
- Women in Science and Engineering
- Jordan Pharmacists Association
- Phi Lambda Upsilon (Honory Chemical Society)
- Who's Who Among Students in American Universities and Colleges

ATTENDED WORKSHOPS

Quality assurance workshop (External reviewers and site visit for the academic program). *Al-Zaytoonah University of Jordan*. Amman, 2-4/11/2013.