Rana M. Jisr

Curriculum Vitae

I. General

A. **Name:** Rana M. Jisr

B. **Present rank and department:** Associate Professor, Chemistry

C. **Degrees held, dates, institutions:**

Spring 2003- Fall 2007 Ph.D. Analytical Chemistry, Florida State University
Fall 1998-Summer 2002 Bachelor of Science in Chemistry, Lebanese University

D. **Date first employed at West Virginia University Institute of Technology :** Fall 2007

E. **Date of tenure or eligibility for tenure:** 2013-2014

F. **Total years of college teaching & professional experience: 9.5** years

G. **Teaching experience record – where, when, etc.**

Teaching Assistant- Chemistry Spring 2003 - Fall 2007 (Florida State University) **5 years**

Assistant Profrssor- Chemistry Fall 2007 (WVU Tech) **4.5 years**

H. **Non-teaching work experience – include a brief description of job title:**

- Research Assistant- Chemistry Spring 2003 – Fall 2007 (Florida State University)
- Completed one month practical training in a chemistry lab at a diesel power plant station in Lebanon.
- Synthesized and modified a variety of monomeric and polymeric compounds to obtain new materials of novel properties, controllable flux and hydrophobicity.
- Gained extensive experience in surface and electrochemical techniques during the course of my research.
- Modified single wall carbon nanotube SWCNT surface to improve binding with epoxy resin using polyelectrolyte multilayers.
- Explored the wetting properties and friction behavior of a novel series of random schizophobic fluorinated zwitterionic copolyelectrolytes using Lateral force microsopy.
- Experienced in Photolithography and silicone-based printing/molding patterning methods.

- Trained to use various spectroscopic, surface and characterization instruments and techniques while studying the newly synthesized thin film coatings and materials in addition to a solid background in organic chemistry.

- Operated and Maintained microscope FT-IR, UV-vis spectroscopy, Profilometery, Ellipsometery, Electrochemistry, Contact Angle (both static and dynamic), AFM, SEM, XRF and TGA.

- Attended a series of professional development workshops about lab safety regulations, grant proposal writing, intellectual property and Technology transfer (patents) sponsored by Congress of Graduate Students (COGS), EPA and Florida State University.

- Took a short course in Trace DSQ II (Thermo Fisher). The training was at West Palm Beach for four days.

II. Teaching

A. Teaching responsibilities:

1. Courses/Labs taught with enrollments (20 hours/week)
   Spring 2003 – Summer 2007

Courses Taught at Florida State University (FSU) as Teaching Assistant

- Organic Chemistry I & II courses (14 semesters)

2. Courses/Labs taught with enrollments (40 hours/week)

Courses/Labs Taught at WVU Tech as Assistant Professor

Fall Semester 2012

Subject/Couse	Description .
Chem/233	**Organic Chemistry I**
Chem/235	**Organic Chemistry I lab**
Chem./115	**General Chemistry I Lab**

Spring Semester 2012

Subject/Couse	Description .
Chem/234	**Organic Chemistry II**
Chem/235	**Organic Chemistry II lab**
Chem 423	**Inorganic Chemistry lab**

Fall Semester 2011

Subject/Couse	Description .
Chem/233	Organic Chemistry I
Chem/235	Organic Chemistry I lab
Chem/493	Polymer Chemistry

Spring Semester 2011

Subject/Couse	Description .
Chem 234	Organic Chemistry II
Chem/236	Organic Chemistry II lab
Chem/112	General Chemistry II lab

Fall Semester 2010

Subject/Couse	Description .
Chem./115-T06	General Chemistry lab
Chem./115-T07	General Chemistry lab
Chem./235	Organic Chemistry I lab
Chem./233	Organic Chemistry I

Spring Semester 2010

Subject/Couse	Description .
Chem/115	General Chemistry lab
Chem/234	Organic Chemistry II
Chem/235	Organic Chemistry II lab
Chem 423	Inorganic Chemistry lab

Fall Semester 2009

Subject/Couse	Description .
Chem./493	Polymer Chemistry
Chem./115	General Chemistry I Lab
Chem./235	Organic Chemistry I Lab
Chem./233	Organic Chemistry I

Spring Semester 2009

Subject/Couse	Description .
Chem./343	Inorganic Chemistry Lab
Chem./236	Organic Chemistry II Lab
Chem./234	Organic Chemistry II

Fall Semester 2008

Subject/Couse	Description .
Chem./235	Organic Chemistry I Lab
Chem./233	Organic Chemistry I

Spring Semester 2008

Subject/Couse	Description .
Chem./115	General Chemistry I Lab
Chem./236	Organic Chemistry II Lab
Chem./234	Organic Chemistry II

Fall Semester 2007

Subject/Couse	Description .
Chem./111	Survey of Chemistry I Lab
Chem./235	Organic Chemistry I Lab
Chem./233	Organic Chemistry I

3. Courses/Labs taught with enrollments (15 hours/week) at

Marshall University and **University of Charleston as Assistant Professor**

Summer Semester 2010:

Subject/Couse	Description .
Chem./204	General Chemistry II (non-major)
Chem/355	Organic chemistry I

Summer Semester 2011:

Subject/Couse	Description .
Chem/355	Organic chemistry I
Chem/201	Organic chemistry I Lab
Chem/202	Organic chemistry II
Chem/202	Organic chemistry II Lab

B. Laboratory and/or course development:

1. Updating and developing course content

- **Co-developing with Dr. Hasan El Rifai a new course from the NASA College Course Development Grant which was awarded Summer 2012 and will be co-taught Spring 2013 entitled: Introduction to Nanoscience & Nanotechnology.**

  This course is aimed at introducing the important concepts and applications of nanoscience and nanotechnology to multidisciplinary audience such as chemistry, physics, biology and engineering students. Tools and principles relevant at the nanoscale dimension will be discussed. It also provides an overview of current and future nanotechnology applications in materials, physics, chemistry, biology, electronics, energy and medicine. This course should be suitable for advanced undergraduates.

- **Updated the courses "Organic Chemistry I and II" which were offered in the Spring and Fall 2012. New problems and power point presentations were developed. All power point, problem sets, solutions and practice exams were posted online.**

- Updated the courses "Organic Chemistry I and II" which were offered in the Spring and Fall 2011. New problems and power point presentations were developed. All power point, problem sets, solutions and practice exams were posted online.

- Updated the courses "Organic Chemistry I and II" which were offered in the Spring and Fall 2010. New problems and power point presentations were developed.

- Developed Introduction to Polymer Chemistry course for the Fall 2009 which was introduced to the Chemistry curriculum.

  Course Objective is to learn the following:

  1. Polymer Chemistry fundamentals: Basic concepts, definitions & classifications of monomers and polymers; Concepts of plastics, rubbers & fibers; glass transition temperature, softening temperature, melting temperature, average molecular weights and molecular weight distribution.

  2. Theories & principles of polymerization: General kinetics & mechanisms of polymerization--free radical, step growth, ionic & stereospecific polymerization, Copolymerization-its technical significance, copolymerization equations & copolymer composition.

3. Study of molecular weights of polymers: principles of determination of molecular weights by viscometry, osmometry, dynamic and static light scattering techniques, gel permeation chromatography and end group analysis.

2. Updating and developing lab content

- **Co-developing with Dr. Hasan El Rifai the lab for the "Introduction to Nanoscience & Nanotechnology" course which will be offered Spring 2013. Laboratory experiments will be conducted to teach the fundamental nano-fabrication and characterization techniques.**

- **Updated the lab content for both Organic Chemistry lab I and II for 2012. Additional Green Chemistry experiments were added to the syllabus for Organic Chemistry Lab. The updated Laboratory manuals were all posted on online. Instrumentation labs were added to the laboratory experiments including IR and GC/MS and NMR.**

- Updated the lab content for both Organic Chemistry lab I and II for 2011. Additional Green Chemistry experiments were added to the syllabus for Organic Chemistry Lab. The updated Laboratory manuals were all posted on online.

- Updated the lab content for both Organic Chemistry lab I and II and Inorganic Chemistry Lab for 2010. Several Green Chemistry experiments were added to the syllabus for Organic Chemistry Lab. The updated Laboratory manuals were printed for these lab courses and handed out to the students.

- Updated the Inorganic Chemistry Lab content for the Spring 2009.

- Updated the Organic Chemistry Lab II content for the Spring 2008.

- Updated the Organic Chemistry Lab I content for the Fall 2007.

III. Scholarship

A. Professional societies:

1. Membership:

- Member of American Chemical Society (ACS)

2. Participation in Professional societies:

- American Chemical Society Kanawha Valley Local Section (KVS-ACS) executive committee member and Coordinator for the ACS National Exams 2008, 2009, 2010, 2011, and **2012**.

B. Publications and Research Citations:

- Jisr, Rana M.; Schlenoff J. B. "Synthesis of Conjugated Polyelectrolytes From Fluorinated Materials" *Manuscript in preparation for submittion to "**Langmuir**" Journal*. **2012**
- Al-Nasra, M.; Jisr, R.; El-Rifai, H. "*Active Learning Techniques in Technical Education"* College & University Teaching and Learning, Lilly Conference. **2011**. (Presentation)

- Jisr, Rana M.; Rmaile Hassan H.; Schlenoff, J. B. "Polyelectrolyte multilayers with ultrahydrophobic properties" ***COLL*** 271, **2006.**

- Jisr, Rana M.; Rmaile, Hassan H.; Schlenoff, Joseph B. "Hydrophobic and ultrahydrophobic multilayer thin films from perfluorinated polyelectrolytes" ***Angewandte Chemie, International Edition*** **2005**, *44*(5), 782-785.

- Jisr, Rana M.; Rmaile, Hassan H.; Schlenoff, Joseph B. "Highly fluorinated polyelectrolytes in multilayers: Synthesis and ultrahydrophobic behavior" ***PMSE*** **2005**, *93*, 670-671.

- Jisr, Rana M.; Rmaile, Hassan H.; Schlenoff, J. B. "Highly fluorinated polyelectrolytes in multilayers: Synthesis and ultrahydrophobic behavior" ***PMSE*** *397*, **2005.**

- Rmaile, Hassan H.; Jisr, Rana; Schlenoff, J. B. "Hydrophobicity is the major driving force for polyelectrolyte multilayer formation: a quantitative study**"** ***PMSE*** **2004**, *90*, 62-63.

- Rmaile, Hassan H.; Jisr, Rana M.; Schlenoff, J. B. "Hydrophobicity is the major driving force for polyelectrolyte multilayer formation: a quantitative study**"** ***PMSE*** *39*, **2004**.

C. Research:

1. Projects:

The primary focus of the research was the development of novel polyelectrolyte fluorinated and Zwitterionic thin films and the study of behavior and attachment of rat

aortic artery cells on these films. All the polymers were synthesized at WVU tech and data was collected at Florida State University since WVU tech lacks the basic instruments needed for this study. Instruments used were IR, Elipsometer, AFM, LFM, Nikon TE-2000 inverted microscope and a (UV) light source , a Chrome quartz photomask and a Karl-Suss MJB3 mask aligner with a 275 W UV light for the pattern alignment for photolithography. Three research study students were working on this project and a manuscript is in preparation to be submitted to "Langmuir" an important journal in Polymer Chemistry.

2. Grants Awarded:

Summer 2012: NASA West Virginia Space Grant Consortium College Course Development Grant Program

Proposal Title:	**Introduction to Nanoscience & Nanotechnology**
Principal Investigator:	**Rana M. Jisr, Assistant Professor of Chemistry**
Co-Principal Investigator:	**Hasan M. El Rifai, Assistant Professor of Chemistry**

Summer 2008: WV EPSCoR Mini-Grant Program

Proposal Title:	Increasing the Efficiency of Multi-Junction Photovoltaic Solar Cells Using Polyelectrolyte Multilayer thin films.
Principal Investigator:	Rana M. Jisr, Assistant Professor of Chemistry

D. Journal Manuscript Editing:

1. **Editing four chapters for an Organic Chemistry book by Dr. Xiaoping Sun entitled: "Organic Mechanisms: Reactions, Methodology, and Biological Applications" for an advanced undergraduate and graduate courses of Organic Chemistry mechanisms. Wiley Press 2012**

2. Edited the manuscript entitled: "Formation of Diphenyl Sulfoxide and Diphenyl Sulfide via the Aluminum Chloride Facilitated Electrophilic Aromatic Substitution of Benzene with Thionyl Chloride, and a Novel Reduction of Sulfur (IV) to Sulfur (II)" for Phosphorus, Sulfur, and Silicon and the Related Elements Journal. Manuscript ID (GPSS-2010-0042) **Spring 2010**

3. Edited the manuscript entitled: "Symmetry Analysis in Mechanistic Studies of Nucleophilic Substitution and β-Elimination Reactions" for author: Xiaoping Sun. Manuscript ID: (Symmetry-feat-01) **Spring 2010.**

C. Awards:

- Received a certificate from ACS (American Chemical Society) in recognition of contributions to chemical education by organizing the **2008-2009-2010-2011** U.S. National Chemistry Olympiad Competition.
- Awarded a certificate of appreciation for demonstrating excellence in customer service at WVU-Tech **(2011)**.

- Received a certificate from ACS (American Chemical Society) in recognition of contributions as a Chair to the ACS Local section in West Virginia **(2010)**.

- Awarded a teaching certificate from "***P****rogram of* ***I****nstructional* ***E****xcellency"* ***PIE*** at Florida State University **(2004)**.

- Received a commendation certificate for having the best final graduation project in the Chemistry Department at the Lebanese University **(2002)**.

- Received the first prize award for "*Environmental Engineering Inventions*" at the Annual Schtroumpf Environmental Contest "Go Green" sponsored by the United Nations Development Program (UNDP) **(2002)**.

IV. Service:

Community service:

- **Hold up help sessions for any student struggling in the Organic Chemistry courses.**

- **Director of the National Chemistry Olympiad at West Virginia 2008 - Present. 300 students from 10 schools participated in both Local and Achievement ACS Exams for 2012. The exams were located in 3 different schools: WVU-Tech, UC, and WVU-state. Medals and Trophies were presented to the winners at an awards banquet held on May 18, 2012 at the University of Charleston.**

- **Executive Committee Member for ACS Kanawha Valley Section 2012.**

- **Served as a member of the FEC committee for 2012.**

- **Served as a member of a comitte search for chief financial officer**

- Served as a committee member in the ACS Chemical Sciences Scholarship 2010-2011. Two grants of 1,500 $ each were awarded to two high school seniors on April 1, 2010 and May 20, 2011 at the Awards banquet at the University of Charleston. Applicants were awarded the grants based on an autobiographical sketch portion of the application where they discussed their scholastic and extracurricular activities including those that demonstrate their interest in science.

- Served as a chemistry judge in the Twenty-Fourth Annual Math and Science Bowl 2011.

- Performed chemistry fun experiment for the Open House held on Fall 2011.

- Chair of ACS Kanawah Valley Fall 2009 – Fall 2010 (1 year)

- Chair Elect for ACS Kanawah Valley Fall 2008 – Fall 2009 (1 year)