

## Elite Study Program - Macromolecular Science

### Advanced Module M031

# Nanofibers by Electrospinning

#### Module Coordination:

Prof. Andreas Greiner, Prof. Seema Agarwal, Dr. Andreas Bernet

#### Guest Speakers:

Prof. Seeram Ramakrishna (National University of Singapore)

Prof. Tamer Uyar (Bilkent University, Ankara, Turkey)

Prof. Joachim H. Wendorff (Philipps-Universität Marburg, Germany)

Winter term 2013/14

This advanced module within the Elite Study Program "Macromolecular Science" is on "**Nanofibers by Electrospinning**". The module covers special aspects of formulations and properties of electrospinning and can be individually tailored adapting the interests of the students. The module consists of four elements:

## **I. Lectures by international experts on preparation, characterization and properties of electrospun nanofibers at Bayreuth Polymer Symposium 2013 (BPS '13)**

**Sunday, September 15<sup>th</sup>, 2013: Lecture hall: H 18 NWII**

### **Keynote lecture**

18:45 – 19:30 "*Electrospun Nanomaterials: Future Perspectives*"  
Prof. Seeram Ramakrishna (National University of Singapore)

**Monday, September 16<sup>th</sup>, 2013: Lecture hall: H 18 NWII**

### **Special Session: Nanofiber by Electrospinning**

11:45 – 12:15 "*Polymer network in a strong extensional flow – a study of the electrospinning jet*"  
Prof. Eyal Zussman (Technion, Haifa, Israel)

12:15 – 12:45 "*Mechanical properties of electrospun fibers: Measurements and analyses of single electrospun fibers*"  
Prof. Haoqing Hou (Nanchang Normal University, PRC)

14:00 – 14:30 "*New concepts for one- and three-dimensional nanocomposites*"  
Prof. Seema Agarwal (Universität Bayreuth, Germany)

14:30 – 15:00 "*Title*"  
Prof. Martin Möller (RWTH Aachen, Germany)

15:30 – 16:00 "*Electrically-Assisted Subsonic and Supersonic Solution Blowing of Monolithic and Core-Shell Petroleum-Derived and Bio-Polymer Nano-Fibers*"  
Prof. Alexander Yarin (University of Chicago, US)

The homepage of the conference is: <http://www.mc1.uni-bayreuth.de/web/bps/index.html>

## **II. Lectures of experts on polymer formulations for electrospinning**

**Wednesday, September 18<sup>th</sup>, 2013: Seminar room PNS building**

9:00 – 9:40 "*Concept and theory of polymer nanofibers by electrospinning*"  
Prof. Joachim H. Wendorff (Philipps-Universität Marburg, Germany)

9:40 – 10:20 "*Waterborn electrospun nanofiber nonwovens*"  
Prof. Seema Agarwal (Universität Bayreuth, Germany)

10:20 – 10:40 Coffee break

10:40 – 11:20 "*Electrospinning of non-polymeric systems: Challenges and Possibilities*"  
(Prof. Tamer Uyar, UNAM-Institute of Materials Science & Nanotechnology, Bilkent University, Ankara, Turkey)

11:20 – 12:00 "*Analytical methods for the characterization of electrospinning formulations*"  
(Dr. Roland Dersch, Universität Bayreuth, Germany)

### **III. Practical courses on formulations for electrospinning**

#### ***Friday, September 20<sup>th</sup>, 2013: PNS building***

08:00 – 08:30 Introduction of experiments for the design of electrospinning formulations, safety instructions

08:30 – 12:00 Preparation, characterization, and electrospinning of formulations

### **IV. Student talks on selected topics**

#### ***Friday, September 20<sup>th</sup>, 2013: Seminar room at PNS building***

<i>Timetable:</i>	<i>Students:</i>	<i>Presentation about:</i>
13:00 – 13:20 Group 1	Irene Boos Julienne Münzner	Martin Möller
13:25 – 13:45 Group 2	Miriam Mauer Benedikt Neugirg	Seeram Ramakrishna
13:50 – 14:10 Group 3	Astrid Rauh Julia Singer	Joachim Wendorff

Two participating students will select one speaker of the BPS '13 electrospinning special session *or* one speaker of the "Lectures of experts" and will prepare a short presentation (20 minutes + 5 minutes discussion) including

- 1) Curriculum Vitae
- 2) University and department
- 3) Research activities
- 4) Presentation of recent papers

Talks and discussions will be held in English.