

Program

Colloidal, Macromolecular & Biological Gels II

July 21–24, 2019
Maryborough Hotel
Cork, Ireland

Conference Co-Chairs

Samiul Amin
Manhattan College, USA

Saad Khan
North Carolina State University
USA

Srinivasa Raghavan
University of Maryland, USA



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Engineering Conferences International (ECI) is a not-for-profit global engineering conferences program, originally established in 1962, that provides opportunities for the exploration of problems and issues of concern to engineers and scientists from many disciplines.

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Previous conference in this series

***Colloidal, Macromolecular & Biological Gels:
Formulation, Properties & Applications***

July 10-14, 2016

Hernstein, Austria

Conference Chairs:

Samiul Amin, L'Oreal , USA

Saad Khan, North Carolina State University, USA

Sunday, July 21, 2019

2:30 pm – 4:00 pm Conference check-in (Sherrard Foyer)

4:20 pm – 4:30 pm Welcome and conference logistics
Srini Raghavan and Saad Khan

Session 1: Engineering and Fabrication of New Materials

Session Chair: Orlando Rojas

4:30 pm – 5:00 pm Orlin Velev, NC State University, USA
A NEW CLASS OF SOFT DENDRITIC COLLOIDAL MICROGELS WITH
EXTRAORDINARY GELATION AND ADHESIVE CAPABILITIES

5:00 pm – 5:30 pm Vijay John, Tulane University, USA
THE DESIGN OF FUNCTIONAL SUPRAMOLECULAR GELS AND COATINGS USING
HYDROPHOBICALLY MODIFIED BIOPOLYMERS AND POLYPEPTOIDS

5:30 pm – 6:00 pm Oguz Okay, Istanbul Technical University, Turkey
SUPRAMOLECULAR POLYMERIC GELS AND ELASTOMERS WITH SELF-HEALING
AND SHAPE-MEMORY FUNCTIONS

6:00 pm – 6:30 pm Michel Cloitre, ESPCI PSL, France
ENGINEERING GLASSES AND GELS USING SOFT COLLOIDS

6:30 pm – 7:30 pm Welcome reception with entertainment (Orangery)

7:30 pm – 9:00 pm Dinner (Bellini's Restaurant)

NOTES

- *Technical sessions will be in Sherrard Suite B. Poster sessions will be in Sherrard Suite A.*
- *Audio, still photo and video recording by any device (e.g., cameras, cell phones, laptops, PDAs, watches) are strictly prohibited during the technical sessions, unless the author and ECI have granted prior permission.*
- *Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before). Please leave at least 3-5 minutes for questions and discussion.*
- *All breakfasts and lunches, as well as dinners on Sunday and Monday, will be in Bellini's Restaurant.*
- *The conference banquet on Tuesday will be in the Orangery.*
- *Coffee breaks will be in Sherrard Suite A.*
- *The ECI Office is in the Cedar Room.*
- *Please do not smoke at any conference functions.*
- *Turn your mobile telephones to vibrate or off during technical sessions.*
- *Please write your name on your program so that it can be returned to you if lost or misplaced.*
- *After the conference, ECI will send an updated participant list to all participants. Please check your listing now and if it needs updating, you may correct it at any time by logging into your ECI account.*
- *Emergency Contact Information: Because of privacy concerns, ECI does not collect or maintain emergency contact information for conference participants. If you would like to have this information available in case of emergency, please place your emergency contact information on the reverse side of your name badge.*

Monday, July 22, 2019

7:00 am – 8:30 am Breakfast buffet

Session 2: Biopolymers, Biological Networks and Hydrogels – I

Session Chairs: Vijay John, Kelly Schultz

- 8:30 am – 9:00 am Gregory Payne, University of Maryland, USA
BIOLOGY AS A SOURCE OF EXCITABLE MEDIA FOR COMPLEX AND RECONFIGURABLE HYDROGELS
- 9:00 am – 9:30 am Ronit Bitton, Ben-Gurion University of the Negev, Israel
POLYSACCHARIDE HYDROGELS CROSS-LINKED VIA PEPTIDE-DENDRIMERS
- 9:30 am – 10:00 am Jessica Schiffman, U. Massachusetts @ Amherst, USA
BACTERIA ADHESION IS MECHANOSENSITIVE TO POLYMER GEL PROPERTIES
- 10:00 am – 10:30 am Kenji Aramaki, Yokohama National University, Japan
HYDROGEL FORMED BY ORGANOGELATOR THROUGH SURFACTANT-MEDIATED GELATION (SMG) METHOD
- 10:30 am – 11:00 am Coffee break
- 11:00 am – 11:30 am Orlando Rojas, Aalto University, Finland
HYDROGELS OF CHIRAL-NEMATIC CELLULOSE NANOCRYSTALS AND NANOCHITIN
- 11:30 am – 12:00 pm Justin Burton, Emory University, USA
TIME-DEPENDENT FRICTION AND DYNAMICS IN HYDROGEL SURFACE CONTACTS
- 12:00 pm – 12:30 pm Krassimir Velikov, Unilever, Netherlands
ENHANCED STIFFNESS OF BIO-BASED COMPOSITE GELS COMPRISING CELLULOSE MICROFIBRILS AND PLANT-DERIVED BIOPOLYMERS
- 12:30 pm – 2:00 pm Lunch
- 2:00 pm – 4:30 pm Networking / free time / *ad hoc* sessions
- ### **Session 3: Biopolymers, Biological Networks and Hydrogels – II**
- Session Chair: Dave Adams
- 4:30 pm – 5:00 pm Kelly Schultz, Lehigh University, USA
RHEOLOGICAL CHARACTERIZATION OF DYNAMIC RE-ENGINEERING OF THE PERICELLULAR REGION BY HUMAN MESENCHYMAL STEM CELL-SECRETED ENZYMES IN WELL-DEFINED HYDROGEL SCAFFOLDS
- 5:00 pm – 5:30 pm Shih-Huang Tung, National Taiwan University, Taiwan
LECITHIN ORGANOGELS INDUCED BY SIMPLE INORGANIC SALTS
- 5:30 pm – 6:00 pm Daniel King, Hokkaido University, Japan
MACROSCALE DOUBLE NETWORKS: EXPANDING THE "SACRIFICIAL BOND CONCEPT" TO LARGE LENGTH-SCALES
- 6:00 pm – 6:30 pm Coffee break

Monday, July 22, 2019 (continued)

- 6:30 pm – 7:00 pm Jan Genzer, NC State University, USA
CREATING ELASTOMER AND HYDROGEL LAYERS WITH SPATIAL VARIATION OF
CROSSLINK DENSITY
- 7:00 pm – 7:30 pm Livia Manni ETH–Zurich, Switzerland
BEYOND FREEZING: LOW TEMPERATURE LIPIDIC CUBIC PHASE AS BIOMIMETIC,
NANOCONFINING MATRIX
- 7:30 pm – 9:00 pm Dinner
- 9:00 pm – 10:00 pm Social hour / **Poster Session**

Tuesday, July 23, 2019

7:00 am – 8:30 am Breakfast buffet

Session 4: Polymer, Polyelectrolyte Gels and Networks

Session Chairs: Jack Douglas, Lilian Hsiao

8:30 am – 9:00 am Surita Bhatia, Stony Brook University, USA
SOFTER JUNCTIONS CAN RESULT IN STIFFER GELS: ASSOCIATIVE POLYMER GELS WITH CRYSTALLINE AND SEMICRYSTALLINE DOMAINS

9:00 am – 9:30 am Dave Adams, University of Glasgow, UK
CONTROLLING AND UNDERSTANDING SINGLE AND MULTICOMPONENT SUPRAMOLECULAR GELS

9:30 am – 10:00 am Saad Khan, NC State University, USA
FROM GELS TO AEROGELS: CREATING MULTIFUNCTIONALITY VIA SOLVENT REMOVAL

10:00 am – 10:30 am Carlos Lopez, RWTH Aachen University, Germany
GELATION OF BIO-POLYELECTROLYTES: INTERPLAY BETWEEN BACKBONE HYDROPHOBICITY, COUNTERION SPECIFICITY AND COUNTERION VALENCE

10:30 am – 11:00 am Coffee break
(Deadline to sign up for boxed lunch on Wednesday)

11:00 am – 11:30 am Jodie Lutkenhaus, Texas A&M University, USA
POLYELECTROLYTE ASSEMBLIES: FUNDAMENTALS AND APPLICATIONS

11:30 am – 12:00 pm Yakov Lapitsky University of Toledo, USA
SOFT MATERIALS FROM POLYELECTROLYTE-MULTIVALENT ION MIXTURES

12:00 pm – 12:30 pm Sarah Perry, University of Massachusetts Amherst, USA
UNDERSTANDING THE ELECTROSPINABILITY OF COMPLEX COACERVATES

12:30 pm – 2:00 pm Lunch

2:00 pm – 4:30 pm Networking / free time / *ad hoc* sessions

Session 5: Responsive Systems, Hydrogels, and Colloidal Networks

Session Chair: Jodie Lutkenhaus

4:30 pm – 5:00 pm Michael KC Tam, University of Waterloo, Canada
RHEOLOGY AND DYNAMICS OF pH-RESPONSIVE MICROGEL SYSTEMS

5:00 pm – 5:30 pm Srinivasa Raghavan, University of Maryland, USA
ELECTRO-RESPONSIVE HYDROGEL FILMS AND BEADS: USING ELECTRIC FIELDS TO BREAK OR STICK SOLIDS

5:30 pm – 6:00 pm Hideki Sakai, Tokyo University of Science, Japan
 α -GEL FORMATION ABILITY OF MONOHEXADECYL PHOSPHATE NEUTRALIZED BY L-ARGININE

6:00 pm – 6:30 pm Coffee break

Tuesday, July 23, 2019 (continued)

- 6:30 pm – 7:00 pm Roger Bonnecaze, University of Texas at Austin, USA
CONNECTION BETWEEN MICROSCOPIC DYNAMICS AND MACROSCOPIC
PROPERTIES OF SOFT PARTICLE GLASSES
- 7:00 pm – 7:30 pm Ramon Rubio, Complutense University Madrid, Spain
MICRORHEOLOGY OF GELS BASED ON POLYMERS AND ON DIFFERENT
COLLOIDAL SYSTEMS
- 7:30 pm – 9:30 pm Conference Banquet

Wednesday, July 24, 2019

7:00 am – 8:00 am Breakfast buffet

8:00 am – 11:30 am **Session 6: Polymer, Soft Solids and Micro-gel/emulsions**
Session Chair: Sarah Perry

8:00 am – 8:30 am Jack Douglas, NIST, USA
Knot Energy, Complexity, and Mobility of Knotted Polymers

8:30 am – 9:00 am H. Henning Winter, University of Massachusetts Amherst, USA
RHEOLOGY OF THE COLLOIDAL GLASS TRANSITION AS COMPARED TO THE
MOLECULAR GLASS TRANSITION AND GELATION

9:00 am – 9:30 am Mohan Srinivasarao, Georgia Tech, USA
COLLOIDAL MICROGEL PARTICLES: CONFINEMENT OF LIQUID CRYSTALS AND
CHARACTERIZATION

9:30 am – 10:00 am Coffee break

10:00 am – 10:30 am Lilian Hsiao, NC State University, USA
THE COLLOIDAL MICROSTRUCTURE OF MECHANICALLY REINFORCED
ORGANOHYDROGELS

10:30 am – 11:00 am Michael Gradzielski, TU Berlin, Germany
RHEOLOGICAL CONTROL OF MICROEMULSIONS IS POSSIBLE BY ADMIXTURE OF
END-CAPPED MULTI-ARM POLYMERS OF DIFFERENT FUNCTIONALITY – A
STUDY OF STRUCTURE AND DYNAMICS

11:00 am – 11:30 am Guarav Arya, Duke University, USA
INTERFACE-MEDIATED ASSEMBLY OF TUNABLE ANISOTROPIC NANOPARTICLE
CLUSTERS AND PHASES

12:00 pm – 1:30 pm Lunch and departures

Boxed lunches available at 11:30am for those who signed up – Sign ups must be
received by 11am on Tuesday, July 23

Posters

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Poster Presentations

1. **Peptide hydrogels from twisted ribbon aggregates**
Axel Rüter, Lund University, Sweden
2. **Large-area alginate/PEO-PPO-PEO hydrogels with thermoreversible rheology at physiological temperatures**
Surita Bhatia, Stony Brook University, USA
3. **Cluster formation during aging of colloid-polymer dispersions and re-entrant rheological behavior at interfaces and the microscale**
Surita Bhatia, Stony Brook University, USA
4. **Understanding affinity-driven protein uptake into ionically crosslinked chitosan micro- and nanogels**
Yakov Lapitsky, University of Toledo, USA
5. **Desalination using polyelectrolyte hydrogels**
Lucie Nová, Charles University, Czech Republic
6. **Shear-dependent structures of microfibrillated cellulose gels**
Emily Facchine, North Carolina State University, USA
7. **Electrospinning complex coacervates**
Sarah L. Perry, University of Massachusetts Amherst, USA
8. **One-pot synthesis of surface anchored network coatings**
Jan Genzer, North Carolina State University, USA