

**INSTITUTE FOR POLYMER RESEARCH (IPR)
UNIVERSITY OF WATERLOO
WATERLOO, ONTARIO N2L 3G1**

NEWSLETTER 2017

1. NOTE FROM PROFESSOR JEAN DUHAMEL, IPR DIRECTOR

2018 marks an important date for the IPR as the first annual IPR Symposium was held in 1978, 40 years ago! As we enter this new year, it is worth appreciating the remarkable foresight of the IPR founders, Profs. Kenneth O'Driscoll from Chemical Engineering and Alfred Rudin from Chemistry, who created at UW an institution that after 40 years of activity, continues to promote polymer research at an impressive pace and scale. With 15 members all active in polymer research, the IPR remains one of the most "polymer active" center in North America. In 2017, the IPR as a whole, published 39 papers in high ranking journals. Another indication of the dynamism of the IPR is the addition of another faculty member, bringing the IPR membership to 16. Prof. Derek Schipper from the Department of Chemistry has joined the IPR in November 2017. His research interests are in organic and material chemistry with a focus on the preparation of conjugated materials. The IPR is delighted to welcome him and his group.

The place where the research activity generated by the IPR comes into full force is, of course, the annual IPR Symposium which was held on May 3rd, 2017. Nimer Murshid and Jesse Quinn from the laboratories of Profs. Wang (Chemistry) and Li (Chem. Eng.) were the 2017 IPR awardees. They gave two well-received presentations on the associations generated by building blocks containing metal-carbonyl motives and on sensors working with organic thin-film transistors. Together, the symposium hosted 20 oral presentations from graduate students on topics that ranged from the chemical modification of starch to the preparation of polypeptide block copolymers. Two industrial visitors gave the two keynote addresses of the symposium. Dr. Andrew Kee from Woodbridge Foam Corporation gave a very interesting talk on the importance of polyurethane foams in an industrial context and Dr. Kevin Kulbaba from Arlanxeo provided hands-on examples of butyl rubbers and how their structure affects their elastic properties. We also had visitors from BASF, 3M, and OMNOVA. As usual, the symposium continues to provide a great venue for our industry visitors to interact with students and faculty members, and fostering research exchanges between Academia and Industry. The annual IPR Symposium remains the main venue where the institute displays the breadth and depth of its research and continues to be the *must-attend* IPR event of the year.

Among the highlights of this year, Prof. Mario Gauthier continues to represent the IPR on the international stage as recipient of the High-end Foreign Experts Program Award with Wuhan in the Hubei Province (China). Prof. Boxin Zhao received the 2017 Engineering Research Excellence Award for outstanding research accomplishments, innovative ideas, and dedication to the Faculty's research at Waterloo.

In terms of editorial duties, Profs. Penlidis and Vivaldo Lima both serve on the editorial board of *J. Macromol. Sci.- Pure Appl. Chem.* and Prof. Penlidis on the editorial board of *Appl. Chem. Polymer-Plastics Techn. and Eng., Macromol. React. Eng., and Processes*. Profs. Boxin Zhao and Jean Duhamel served as Guest Editor of a special issue on Surface modification and functional coating for polymers in *MDPI Polymers* and Polymer Characterization in *Polymers*, respectively. Prof. Jean Duhamel became a member of the Editorial Advisory Board of *Langmuir*.

The 40th IPR Symposium has been scheduled on May 9th, 2018. Drs. Joel Goldstein from OMNOVA and Mohsen Soleimani from BASF will give our Keynote Addresses. Prof. Marc Hillmyer who has recently become the Editor-in-Chief of *Macromolecules* will be attending the symposium on May 9th and will deliver a presentation as part of the IPR Distinguished Lecture Series on May 10th, 2018. We are certainly excited about this upcoming activity.

Last but not least, the next IPR symposium promises to be a true "Polymer Feast" and the entire IPR community looks forward to welcoming you at this year 40th IPR Symposium held on May 9th, 2018.

2. ANNUAL IPR SYMPOSIUM

The 40th Annual IPR Symposium will be held May 9, 2018. A schedule and registration forms have been circulated electronically.

Many thanks to all who participated in the 2017 Symposium (an audience of about 90 people). IPR received very positive feedback regarding the topics covered. The 2017 program and the list of industrial participants are attached (Appendix 1).

3. IPR INDUSTRIAL MEMBERS

An up-to-date list of our current industrial members is attached (Appendix 2).

4. IPR PREPRINTS

During 2017, the IPR office sent out 39 preprints to our members (Appendix 3).

5. RESEARCH PROGRAMS

We have more than 90 research personnel (excluding faculty) involved in polymer research at the University of Waterloo. Industrial members may find it interesting to keep up to date with the various research projects that are underway (see list attached of research personnel, Appendix 4). For more information on any project, please email/call the appropriate supervisor or the IPR office at <ipr@uwaterloo.ca>, 519/888-4789.

6. RECENTLY GRADUATED STUDENTS

J. Duhamel

MSc	Chem	Gholami, K.	Associations between EP copolymers in Base Oils Probed by Fluorescence
MSc	Chem	Hisko, V.	Effect of Linker Length between Pyrene and PBMA to Probe Interparticle Polymeric Diffusion

X. Feng

MSc	ChE	Celarek, M.	Sorptive removal of amino-phenol from water using a polymeric sorbent
PhD	ChE	Lai, S.	Sorptive separation of phenolic compounds from wastewater
MSc	ChE	Qiu, B.	Removal of dimethylacetamide from wastewater by adsorption

M. Gauthier

MSc	Chem	Hisko, V.	Effect of Linker Length between Pyrene and PBMA to Probe Interparticle Polymeric Diffusion
PhD	Chem	Alsehli, M.	Arborescent polypeptide micelles
PhD	Chem	Neqal, M.	Smart Polymeric Nanomaterials by ROMP

Y. Li

PhD	ChE	Quinn, J.	Nature-Inspired Polymers: Promising Materials for OTFT-Based Sensors
PhD	ChE	He, Y.	Novel N-type π -conjugated Polymers for All-polymer Solar Cells

A. Penlidis

PhD	ChE	Stewart, K.	Polymeric sensors for the detection of aqueous toxic analytes (now a professor at Troy Univ, Alabama, USA)
PhD	ChE	Sepiani, H.	Nonlinear macromechanical analysis of polymeric

PhD	ChE	Arczewska, P.	Structures Performance criteria for glass fibre reinforced polymer (GFRP) bars (now with Bridge Design, Hamilton, ON)
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D. Schipper

Msc	Chem	Yang, T.	Copper Mediated Tanem C-H Bond Funcionalization/C-S Bond Formation
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MSc	Chem	Vanderzwet,L.	Exploiting the Hydrocarylation Reaction for Efficient Access to Conjugated Polymers
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M. Tam

PhD	Chem	Zang, Z.	Controlled radical polymerization of polymer brushes in CNC
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E. Vivaldo-Lima

PhD	Meng	J. Romero-Hernandez	Modeling of Superacid Catalyzed Step-growth Polymerization of Isatin and Biphenyl or Terphenyl Monomers
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X. Wang

PhD	Chem	Lanigan N.	Bulk supramolecular polymers of metal carbonyl derivatives
Msc	Chem	Leung, A.	Synthesis and characterization of metal carbonyl copolymers
PhD	Chem	Liu, D.	Self-assembly of metal carbonyl polymers and small molecules

B. Zhao

PhD	ChE	Shahsavan, H.	Liquid crystal networks for smart biomimetic micro/nano structured adhesives
MSc	ChE	Liew K.	Fabrication and characterization of biomimetic dry adhesives supported by foam backing material

7. ACADEMIC MEMBERS OF THE INSTITUTE FOR POLYMER RESEARCH

Professors:

R. Dhib	Chem. Eng.	Ryerson
T.A. Duever	Chem. Eng.	Ryerson
J. Duhamel, Director	Chemistry	Waterloo
X. Feng	Chem. Eng.	Waterloo
J. Forrest	Phys. Astro.	Waterloo
M. Gauthier	Chemistry	Waterloo
Y. Li	Chem. Eng.	Waterloo
N. McManus	Chem. Eng.	Waterloo
A. Penlidis	Chem. Eng.	Waterloo
D. Schipper	Chemistry	Waterloo
L.C. Simon	Chem. Eng.	Waterloo
M. Tam	Chem. Eng.	Waterloo
C. Tzoganakis	Chem. Eng.	Waterloo
E. Vivaldo-Lima	Chem. Eng.	UNAM, Mexico
X. Wang	Chemistry	Waterloo
B. Zhao	Chem. Eng.	Waterloo

For a brief description of research interests and projects, along with contact information, please visit the following web link: www.uwaterloo.ca/institute-polymer-research/

8. MEMBER COMPANIES—2017

Currently we have **7 member companies**: (refer also Appendix 3)

Afton Chemical

BASF

Compuplast Canada Inc.

Lanxess Inc.

OMNOVA Solutions Inc.

PolyVation, The Netherlands

Princeton Polymer Consultants, USA

9. STUDENT AWARDS

M. Gauthier

Basma Mahi (PhD) received the Saudi Arabia Scholarship

Y. Li

Yinghui He received the Outstanding Oversea Student Award, Chinese Scholarship Council

A. Penlidis

Alison Scott, was awarded a 3-yr NSERC Alexander Graham Bell Canada Graduate Scholarship (CGS D) and received the WIN Nanofellowship Award, Waterloo Institute for Nanotechnology, University of Waterloo, September 2017

M. Tam

Debbie Wu received the 2017 Park Reilly medal and Nate received the WIN fellowship.

B. Zhao

Hamed Shamsavan received an Outstanding Achievement in Graduate Studies award, 2017

Hamed Shamsavan, NSERC PDF fellowship 2018

E. Vivaldo Lima

Antete Joceline Benítez-Carreón : IMIQ 2017 Award “Ing. Alberto Urbina del Raso” to the outstanding bachelors thesis or written equivalent document in Chemical Engineering, entitled (Simulation of Low Density Polyethylene Production Processes). Puebla City, Puebla, México, October 2017.

10. FACULTY AWARDS

A Penlidis

Top 150 Alumni List, McMaster Univ. (on occasion of Canada's 150th Anniversary)

E. Vivaldo Lima

Winner (jointly with Mr. René Yamamoto-Arana, from PEMEX-Petroquímica) of the "IMIQ 2017 Award "Ing. Alberto Urbina del Raso" for the brilliant supervision of a B.Eng. Thesis in Chemical Engineering", entitled "Simulación de Procesos de Producción de Polietileno de Baja Densidad" (Simulation of Low Density Polyethylene Production Processes), Puebla City, Puebla, México, October 2017.

University Research Chair

B. Zhao

Engineering Research Excellence Award (for outstanding research accomplishments, innovative ideas and dedication to the Faculty's research), University of Waterloo

ReMap (Refined Manufacturing Acceleration Process) Network Commercialization Finalist Award, Toronto, Canada

11. FULL REFEREED JOURNAL PAPERS

J. Duhamel

New Approaches to Characterize Polymeric Oil Additives in Solution Based on Pyrene Excimer Fluorescence. Pirouz, S.; Duhamel*, J. J. Polym. Sci. B: Polym. Phys. 2017, 55, 7-18.

Using Pyrene Excimer Fluorescence to Probe Polymer Diffusion in Latex Films. Casier, R.; Gauthier*, M.; Duhamel*, J. Macromolecules 2017, 50, 1635-1644.

Using Pyrene Excimer Fluorescence to Probe the Interactions between Viscosity Index Improvers and Waxes Present in Automotive Oil. Pirouz, S.; Duhamel*, J.; Jiang, S.; Duggal, A. Macromolecules 2017, 50, 2467-2476.

Long Range PolymerChain Dynamics of a Stiff Polymer. Fluorescence from Poly(isobutylene-alt-maleic anhydride) with N-(1-Pyrenylmethyl) Succinimide Groups. Thoma, J. L.; Duhamel*, J.; Li, M.-J.; Bertochhi, M. J.; Weiss*, R. G. Macromolecules 2017, 50, 3396-3403.

Temperature Response of Aqueous Solutions of Pyrene End-Labeled Poly(N-isopropyl acrylamide)s Probed by Steady-State and Time-Resolved Fluorescence. Fowler, M.; Duhamel*, J.; Qiu, X. P.; Korchagina, E.; Winnik*, F. M. J. Polym. Sci. Polym. Phys. 2018, 56, 308-318.

Characterization of the Distribution of Pyrene Molecules in Confined Geometries with the Model Free Analysis and its Applications. Cao, X.; Casier, R.; Little, H.; Duhamel*, J. J. Phys. Chem. B 2017, 121, 11325-11332.

X. Feng

Y. Huang, M.U. Farooq, S. Lai, P. Sampranpiboon, X. Wang, W. Huang, X. Feng (2017), "Model fitting of sorption kinetics data: Misapplications overlooked and their rectifications," AIChE Journal, accepted Dec 2017.

X. Wang, Y. Huang, S. Li, W. Huang, X. Feng (2017), "Preparation of porous Er-TiO₂ films and their photocatalytic performance," *Chin J Nonferrous Metals*, 27, 1621-1631.

O. Oribayo, Q. Pan, X. Feng, G.L. Rempel (2017), "Hydrophobic surface modification of FMSS and its application as effective sorbents for oil spill clean-ups and recovery," *AIChE Journal*, 63, 4090-4102.

Y. Huang, K. Bailey, S. Wang, X. Feng (2017), "Silk fibroin films for potential applications in controlled release," *Reactive and Functional Polymers*, 116, 57-68.

Q. Shi, L. Ni, Y. Zhang, X. Feng, Q. Chang, J. Meng (2017), "Poly(p-phenylene terephthamide) embedded in polysulfone as substrate for improving compaction resistance and adhesion of a thin film composite polyamide membrane," *Journal of Materials Chemistry A*, 5, 13610-13624.

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C. Sun, X. Feng (2017), "Enhancing the performance of PVDF membranes by hydrophilic surface modification via amine treatment," *Separation and Purification Technology*, 185, 94-102.

L. Lin, H. Sun, K. Zhang, Y. Zhong, Q. Chen, X. Bian, Q. Xin, B. Cheng, X. Feng, Y. Zhang (2017), "Novel affinity membranes with macrocyclic spacer arms synthesized via click chemistry for lysozyme binding," *Journal of Hazardous Materials*, 327, 97-107.

D. Wu, Z. Tan, X. Feng, W.A. Anderson, Q. Li (2017), "Regeneration of cobalt complexes by thermal decomposition and acid treatment for NO absorption," *Chemical Engineering Journal*, 315, 233-242.

M. Mujiburohman, X. Feng (2017), "Simulation of recovery of aroma compound from aqueous solutions by batch pervaporation coupled with permeate decantation and water phase recycle," *J. Membr. Sep. Technol.*, 5, 157-166.

X. Wang, Y. Huang, X. Zhang, X. Feng, W. Huang (2017), "Synthesis of hydrophilic acid-resistant Ge-ZSM-5 membranes via secondary growth method using silicalite-1 zeolite as seeds," *Chemical Research in Chinese Universities*, 33(1), 12-16.

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N. McManus

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Saeb, M.R., Y. Mohammadi, H. Rastin, T.S. Kermaniyan and A. Penlidis (2017). Visualization of bivariate sequence-length-chain length distribution in free radical copolymerization. *Macromol. Theory and Simul.*,

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D Schipper

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M. Zatloukal, T. Barbořík, C. Tzoganakis (2017). "On the Role of Extensional Rheology and Deborah Number on the Neck-In Phenomenon during Flat Film Casting", *Int. J. Heat Mass Transfer*, 111, 1296-1313.
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P. Mutyala, M. Meysami, S. Zhu and C. Tzoganakis (2017). "Statistical Analysis of the Compatibilization of Devulcanized Tire Rubber and Polypropylene by Peroxide/Sulphur Curing", *GAK Gummi Fasern Kunststoffe*, 70(2), 114-122.

M. Meysami, C. Tzoganakis, P. Mutyala, S-H. Zhu and M. Bulsari (2017). "Devulcanization of scrap tire rubber with supercritical CO₂: A study of the effects of process parameters on the properties of devulcanized rubber", *Intern. Polymer Processing*, XXXII, 183-193

E. Vivaldo-Lima

Porfirio López-Domínguez, Julio César Hernández-Ortiz, Eduardo Vivaldo-Lima*, "Modeling of RAFT Copolymerization with Crosslinking of Styrene/Divinylbenzene in Supercritical Carbon Dioxide", *Macromol. Theory Simul.*,

Juan Enrique Romero-Hernández, Alfredo Cruz-Rosado, Mikhail G. Zolotukhin, and Eduardo Vivaldo-Lima*, "Modeling of Superacid Catalyzed Step-growth Polymerization of Isatin and Biphenyl or Terphenyl Monomers", *Macromol. Theory & Simul.*, 26, 1700031 (1-16), 2017.

Patricia Pérez-Salinas, Gabriel Jaramillo-Soto, Alberto Rosas-Aburto, Humberto Vázquez-Torres, Ma. Josefa Bernad-Bernad, Ángel Licea-Claverie, and Eduardo Vivaldo-Lima*, "Comparison of Polymer Networks Synthesized by Conventional Free Radical and RAFT Copolymerization Processes in Supercritical Carbon Dioxide" (invited feature paper), *Processes* 2017, 5(2), 26, 1-23.

Jesús Díaz-Sánchez, Alberto Rosas-Aburto, Eduardo Vivaldo-Lima, José M. Hernández-Alcántara, Isabel Gracia-Mora, Humberto Vázquez-Torres, Luis C. Ordoñez, Pedro Roquero, Miquel Gimeno*, "Development and characterization of a flexible electrochromic device based on polyaniline and enzymatically synthesized poly (gallic acid)", *Synthetic Metals (Synth. Met.)*, 223, 43-48, 2017.

X. Wang

The Effect of Solution Conditions on the Driving Forces for Self-Assembly of a Pyrene Molecule. Shaowei Shi, Dapeng Liu, Xiaosong Wang, *Chemistry-A European Journal*, 2017, 23, 9736–9740.

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Aqueous self-assembly of hydrophobic macromolecules with adjustable rigidity of the backbone Guan, Zhou; Liu, Dapeng; Lin, Jiaping; Wang Xiaosong *SOFT MATTER* 2017, 13 5130-5136

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Polymer Assemblies with Nanostructure-Related Aggregation-Induced Emission Huo, Meng, Ye, Qiuan, Che, Hailong, Wang, Xiaosong, Wei, Yen, Yuan, Yinying *MACROMOLECULES* 50, 1126-1133.

B. Zhao

Zihe Pan*†, Fangqin Cheng, Boxin Zhao†, "Bio-inspired Polymeric Structures of Special Wettability and Their Applications: An Overview", *MDPI Polymers*.

Pengxiang Si*, Josh Trinidad*, Li Chen**, Brenda Lee, Alex Chen, John Persic, Robert Lyn, Zoya Leonenko and Boxin Zhao†; "PEDOT:PSS Nano-gels For Highly Electrically Conductive Silver/Epoxy Composite Adhesives", *J. Materials Science: Materials in Electronics*.

Hamed Shahsavan*†, Li Yu** , Antony Jakli†, Boxin Zhao†, “Smart Biomimetic Micro/Nanostructures Based on Liquid Crystal Elastomers and Networks”, *Soft Matters*.
Neufeld, Ryan; Shahsavan, Hamed; Zhao, Boxin; Abukhdeir, Nasser; “Simulation-based Design of Thermally-driven Actuators using Liquid Crystal Elastomers”, *Liquid Crystals*

Aleksander Cholewinski, Fut K. Yang, and Boxin Zhao, “Underwater Contact Behavior of Alginate and Catechol-conjugated Alginate Hydrogel Beads”, *Langmuir*

Geoffrey Rivers* , Pearl Lee-Sullivan, Boxin Zhao, “Vitrification during cure produces anomalies and path-dependence in electrical resistance of conductive composites”, *Composite Sci Tech*

Geoff Rivers*†, Pearl Lee-Sullivan, Boxin Zhao, Alex Chen, John Persic, Robert Lyn, In-Situ Resistance Characterization During Cure Progression Of An Electrically Conductive Adhesive, *Journal of Surface Mount Technology*

Josh Trinidad* , Li Chen** , Angela Lian and Boxin Zhao†, “Solvent Presence and its Impact on the Lap-Shear Strength of SDS-Decorated Graphene Hybrid Electrically Conductive Adhesives”, *International Journal of Adhesion and Adhesives*

Zihe Pan* , Tianchang Wang** , Li Chen** , Stefan Idziak, Zhaohui Huang† , Boxin Zhao†, “Effects of Rare Earth Oxide Additive on Surface and Tribological properties of Polyimide Composites”, *Applied Surface Science*

YiKang Zhou* ; Wei Zhang* ; Zih Pan* ; Boxin Zhao†, “Graphene-doped polyaniline nanocomposites as electromagnetic wave absorbing materials”, *Journal of Materials Science: Materials in Electronics*

Fatemeh Ferdosian** , Zih Pan** , Guchuhan Gao and Boxin Zhao†, “Bio-Based Adhesives and Evaluations for Wood Composite Application”, *MDPI Polymers*

Jeffrey d’Eon, Wei Zhang* , Li Chen** , Richard M. Berry, and Boxin Zhao†, “Coating nano-crystalline cellulose on polypropylene and its film adhesion and mechanical properties”, *Cellulose*

Zeinab Jahed, Hamed Shahsavan* , Mohit S. Verma, Jacob L. Rogowski, Brandon B. Seo, Boxin Zhao, Ting Y. Tsui, Frank X. Gu, Mohammad R.K. Mofrad, “Bacterial Networks on Hydrophobic Micropillars” *ACS Nano*

13. CONFERENCE PRESENTATIONS/INVITED SEMINARS

J. Duhamel

Latex Film Formation Probed by Pyrene excimer Fluorescence. Casier, R.; Gauthier* , M.; Duhamel* , J. XXVI International Materials Research Congress, Cancun, Mexico, August 20-25, 2017.

A Description of Amylopectin at the Molecular Level in DMSO by Using Pyrene Excimer Fluorescence. Li, L.; Duhamel* , J. *Polymat 2017*, Huatulco, Mexico, October 15-19, 2017.

Fluorescence and its Applicability to the Study of Dispersants, Viscosity Index Improvers, and Power Point Depressants used as Oil Additives. Duhamel, J., Afton Research Center, Richmond, Virginia, USA. Dec 12th, 2017.

X. Feng

X. Feng, "VOC Emission Controls by Membranes," Invited Keynote at the International Symposium on Oil Vapor Emission and Recovery, Changzhou, China, Aug 9-11, 2017.

Y. Huang, K. Bailey, S. Wang, X. Feng, "Silk fibroin membranes for potential applications in controlled release," presented at the 2017 International Congress on Membranes and Membrane Processes (ICOM 2017), San Francisco, CA, July 29 – Aug 4, 2017.

X.D. Wang, X. Zhang, M.Q. Liu, X. Feng, W. Huang, "Preparation of PEBA2533/NaY hybrid membranes for separation of ethylene/propylene mixture," presented at the 2017 International Congress on Membranes and Membrane Processes (ICOM 2017), San Francisco, CA, July 29 – Aug 4, 2017.

J.R. Du, G. Francisco, K. Hu, X. Feng, "A hybrid membrane process for extraction of aroma compounds from coffee," presented at 2017 International Congress on Membranes and Membrane Processes (ICOM 2017), San Francisco, CA, July 29 – Aug 4, 2017.

Q. Shi, Y. Zhang, L. Ni, Y. Cao, J. Meng, X. Feng, "Thin film composite polyamide membranes anchored to poly(p-phenylene terephthamide) polymerized in polysulfone substrate," presented at the 2017 International Congress on Membranes and Membrane Processes (ICOM 2017), San Francisco, CA, July 29 – Aug 4, 2017.

M. Gauthier

Fluorescently Labelled Latex Particles to Monitor Film Formation. Hisko, V.; Gauthier, M.; Duhamel, J. 100th Canadian Chemistry Conference, Toronto, ON, May 28-June 1, 2017.

Characterization of Hydrophobically Modified Starch Nanoparticle by Pyrene Fluorescence. Kim, D.; Amos, R.; Gauthier, M.; Duhamel, D. 100th Canadian Chemistry Conference, Toronto, ON, May 28-June 1, 2017.

Fluorescently Labelled Latex Particles to Monitor Film Formation. Hisko, V.; Duhamel, J.; Gauthier, M. 100th Canadian Chemistry Conference, Toronto, ON, May 28-June 1, 2017.

Systematic Hydrophobic Modification of Starch with Commercially Available Substituted Succinic Anhydrides and Maleated Vegetable Oil. Amos, R. C.; Kuska, M.; Mesnager, J.; Gauthier, M. 100th Canadian Chemistry Conference, Toronto, ON, May 28-June 1, 2017.

Atom Transfer Radical Polymerization (ATRP) Grafting of Starch Nanoparticles with Sodium Acrylate. Fernandez, J.; Tratnik, N.; Gauthier, M. 100th Canadian Chemistry Conference, Toronto, ON, May 28-June 1, 2017.

Arborescent Copolymers with a Core-shell-corona Morphology as Templates for the Preparation of Metallic Nanoparticles. Worku, A.; Nguyen, V. T. A.; Gauthier, M. 100th Canadian Chemistry Conference, Toronto, ON, May 28-June 1, 2017.

Synthesis of Isoprenic Polybutadiene Macromonomers for the Preparation of Branched Polybutadiene. Gauthier, M.; Deepak, V. D. 26th International Materials Research Conference, August 2016, Cancún, México.

Latex Film Formation Probed by Pyrene Excimer Fluorescence. Casier, R.; Gauthier, M.; Duhamel, J. 26th International Materials Research Conference, August 2016, Cancún, México.

Systematic Hydrophobic Modification of Starch with Commercially Available Substituted Succinic Anhydrides and Maleated Vegetable Oil. Amos, R. C.; Kuska, M.; Mesnager, J.; Gauthier, M. International Conference on Polymers and Advanced Materials (Polymat), October 2015, Huatulco, Mexico.

Synthesis of Functional Polyisobutylene-Based Materials By “Click” Chemistry. Gauthier, M.; Deepak, V. D.; Mahmud, I.; Gungör, E. International Conference on Polymers and Advanced Materials (Polymat), October 2015, Huatulco, Mexico.

D Schipper

Reaction Development for the Synthesis of Conjugated Polymers” XXVI International Materials Research Congress, Cancun, Mexico, August 21, 2017.

“Simultaneous Sorting and Alignment of SWNTs” XXVI International Materials Research Congress, Cancun, Mexico, August 23, 2017.

Dehydration Polymerization for Poly(hetero)arene Conjugated Polymers” University of Prince Edward Island, Charlottetown, Prince Edward Island, December 1, 2017

Dehydration Polymerization for Poly(hetero)arene Conjugated Polymers” McMaster University, Hamilton, Ontario, September 28, 2017.

Reaction Development for the Synthesis of Conjugated Polymers” XXVI International Materials Research Congress, Cancun, Mexico, August 21, 2017.

Dehydration Polymerization for Poly(hetero)arene Conjugated Polymers” University of Windsor, Windsor, Ontario, March 31, 2017

A. Penlidis

Arczewska, P., M.A. Polak and A. Penlidis (2017). Deterioration of tensile and shear strength of GFRP bars. Special paper SP-72. American Concrete Institute (ACI), Committee 440, Fiber-Reinforced Polymer Reinforcement, 13th International Symp. on Fiber-Reinforced Polymer Reinforcement for Concrete Structures (FRPRCS-13), Anaheim, Oct 14-15, 2017.

Al-Ghamdi, M. S., M. Khater, K. M. E. Stewart, A. Alneamy, R. Almikhlaifi, S. Park, E. M. Abdel-Rahman, and A. Penlidis. Demonstration of Electrostatic MEMS Bifurcation Sensors. Proceedings, 9th European Nonlinear Dynamics Conference (ENOC2017), June 25-30, 2017, Budapest, Hungary.

Arczewska, P., M.A. Polak and A. Penlidis (2017). Deterioration of tensile and shear strength of GFRP bars. Special paper SP-72. American Concrete Institute (ACI), Committee 440, Fiber-Reinforced Polymer Reinforcement, 13th International Symp. on Fiber-Reinforced Polymer Reinforcement for Concrete Structures (FRPRCS-13), Anaheim, CA, Oct 14-15, 2017.

Scott, A. J., K. M. E. Stewart and A. Penlidis (2017). Identification of VOCs using polymer sensing materials: Application of PCA. 100th Can. Chemistry Conf. (CSC 2017) and Exhibition; paper 104D. Toronto, ON, May 28-June 1, 2017.

Al-Ghamdi, M. S., M. Khater, K. M. E. Stewart, A. Alneamy, R. Almikhlaifi, S. Park, E. M. Abdel-Rahman, and A. Penlidis (2017). Demonstration of electrostatic MEMS bifurcation sensors. Proceedings, 9th European Nonlinear Dynamics Conference (ENOC2017), June 25-30, 2017, Budapest, Hungary.

M. Tam

Invited talk, Western University, London, Ontario, August 2017

Invited talk, LNano, Campinas, Brazil, July 2017

Invited talk, Fibria Innovations, Jacareí, Brazil, July 2017

Invited talk, Embrapa, Sao Carlos, Brazil, July 2017

C. Tzoganakis

M.U. Farooq and C. Tzoganakis (2017). "Modification of LLDPE by UV-Irradiation", Proceedings of the 75th Annual Technical Conference of the Society of Plastics Engineers, May 2017, Anaheim, CA, USA, paper# 396.

P. Mutyala, C. Tzoganakis, M. Meysami and S. Zhu (2017). "Twin Screw Extrusion of TPVs Made from Devulcanized Tire Rubber Crumb and Polypropylene", Proceedings of the 75th Annual Technical Conference of the Society of Plastics Engineers, May 2017, Anaheim, CA, USA, paper# 526.

M. Zatloukal, T. Barborik and C. Tzoganakis (2017). "On the Role of Extensional Rheology, Elasticity and Deborah Number on Neck-In Phenomenon during Flat Film Production", Proceedings of the 75th Annual Technical Conference of the Society of Plastics Engineers, May 2017, Anaheim, CA, USA, paper# 310.

E. Vivaldo-Lima

"Modeling of RAFT Homo- and Copolymerization of Vinyl/Divinyl Monomers in Supercritical Carbon Dioxide" (invited speaker), Porfirio López-Domínguez, Julio César Hernández-Ortiz, and Eduardo Vivaldo-Lima, 67th Canadian Chemical Engineering Conference, Edmonton, Alberta, October 22-25, 2017.

"Modeling of ATRP Polymerization via Kinetic Monte Carlo and the Method of Moments" (poster), Porfirio López-Domínguez and Eduardo Vivaldo-Lima, 67th Canadian Chemical Engineering Conference, Edmonton, Alberta, October 22-25, 2017.

"On the Homogeneity of Polymer Networks Synthesized by FRP and RAFT Copolymerization of Vinyl/Divinyl Monomers in Supercritical Carbon Dioxide" (invited talk), Eduardo Vivaldo-Lima, 4th US-MÉXICO BINATIONAL SYMPOSIUM ON ADVANCES IN POLYMER SCIENCE (Macromex 2017) and XXX Congreso Nacional de la SPM, December 3-7, 2017.

B. Zhao

Boxin Zhao, "Bio-inspired Interfacial Technologies from Chemical Modification to Surface Patterning, and Smart Soft Gripper", City University of HongKong, Nov 23, 2017

Boxin Zhao, "Bio-inspired Interfacial Material Engineering", Tianjin University, Tianjin, China, June 5, 2017

Boxin Zhao, "Development and utilization of conductive nanofillers in electrically conductive adhesives", 2017 Global Conference on Polymer and Composite Materials, Guangzhou, China, May 23-25, 2017.

Zeinab Jahed, Hamed Shahsavan, Mohit S. Verma, Jacob L. Rogowski, Brandon B. Seo, Boxin Zhao, Ting Y. Tsui, Frank X. Gu, Mohammad R.K. Mofrad, "Bacterial Micro-patterning on Hydrophobic Micropillars", Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, October 11-14, 2017.

Zihe Pan and Boxin Zhao, "Electrically Conductive Superhydro-Oleophobic Composite Micropillars for Frozen Oils/Ice Adhesion Reduction at Low Temperatures", 2017 Annual meeting of the Adhesion Society, Feb 26-29, St Petersburg, FL.

14. PATENTS/MAJOR TECHNICAL REPORT/CHAPTERS IN BOOKS/OTHER

X. Feng

X. Feng, I.G. Towe, A. Hamza and J. Perez, "Replenishing liquid material to membrane," US Patent No. 9,782,724 (issued Oct 10, 2017)

A. Penlidis

Izadi, H., A. Zandieh and A. Penlidis (2017). Bio-inspired Dry Adhesives: Contact Electrification and Electrostatic Interactions. Kirk-Othmer Encyclopedia (KOE) of Chemical Techn., Wiley (ms length: 56 pgs and 18,268 words); accepted on April 25, 2017; doi: 10.1002/0471238961.koe00034 (35 pgs), appeared online on Sept 28, 2017.

Penlidis, A. (2017). Special Issue: Water Soluble Polymers. Editorial Note, Processes, vol 5, issue 31, 4 pgs, doi: 10.3390/pr5020031, accepted June 13 2017

15. OTHER HIGHLIGHTS FOR YEAR 2017

Prof Penlidis acted as journal reviewer/adjudicator for 24 manuscripts.

Prof Penlidis acted as consultant for 8 companies (Canada, USA, Europe, Australia, India).

Prof Penlidis served on the editorial boards of the following journals: J. Macromol. Sci.-Pure and Appl. Chem. (considerable work as editorial board member promoting special issues, organizing surveys and adjudicating for editor); Polymer-Plastics Techn. and Eng.; Macromol. React. Eng. (considerable work as editorial board member and adjudicating for editor); Processes (considerable work as editorial board member promoting special issues, organizing surveys and adjudicating for editor).

Prof Penlidis acted as guest-editor in 2016/2017 of a special issue on water-soluble polymers; 17 papers; a book will appear in Amazon in early 2018.

Prof Penlidis' 2017 International/national academic collaborations (regular basis with co-authored articles): UNAM (Mexico), Iran (Paints/Coatings Institute), and more locally, University of Ottawa, UNB, Ryerson Polytechnic Univ. and McGill Univ.

E. Vivaldo-Lima

Prof. Vivaldo-Lima acted as journal reviewer/adjudicator for 17 manuscripts in 8 different journals.

Prof. Vivaldo-Lima served on the editorial board of J. Macromol. Sci.-Pure Appl. Chem.

Prof. Vivaldo-Lima served as President of the jury board for UNAM's "Premio Universidad Nacional (PUN) and Reconocimiento Distinción Universidad Nacional para Jóvenes Académicos (RDUNJA)" (UNAM's main Awards for life long and young academics contributions, respectively), in the category of research in exact sciences (third year of participation, two of them as President).

Prof. Vivaldo-Lima served as member of FQ-UNAM's (Faculty of Chemistry, UNAM) Research Advisory Council ("Consejo Asesor de Investigación", CAI), representing its Chemical Engineering Department (third year of participation).

Boxin Zhao

2017 Session co-organizer, Chemistry of Bioadhesion, 2017 Annual meeting of the Adhesion Society

2017 Session co-organizer, Macromolecular Sciences and Engineering, 67th Canadian Chemical Engineering Conference, Oct 2017

2017 Session chair, "Polymers - Electrical Properties, Energy Applications & Optical Properties Global Conference on Polymer and Composite Materials, Guangzhou, China, May 23-25, 2017.

Guest Editor – MDPI Polymers, Special Issue: "Surface modification and functional coating for polymers", Aug 2017 – June 2018

INSTITUTE FOR POLYMER RESEARCH
CELEBRATING 33 YEARS OF OFFICIAL INSTITUTE STATUS
THIRTY-NINTH ANNUAL SYMPOSIUM
ON POLYMER SCIENCE/ENGINEERING 2017
Conrad Grebel College
Great Hall
University of Waterloo, Waterloo, Ontario
Wednesday, May 3, 2017

8:30 a.m.	Coffee
8:50	Welcome and Opening Remarks
9:00 - 9:20	Nimer Murshid , Chemistry, Waterloo Metal-Carbonyl Building Blocks for Aqueous Colloids with Aggregation-Induced Functions (Winner of the 2016 IPR Award for Academic Excellence in Polymer Science/Engineering)
9:20 - 10:00	Industry Speaker: Dr Kevin Kulbaba ARLANXEO Canada Inc. Title: Viscoelastic Properties of Commercial Elastomers - From Tires to Chewing Gum
10:00 – 10:20	<u>5-Min. Mini Presentations</u> 1) Joanne Fernandez Polyacrylonitrile-Modified Starch Nanoparticles by Cerium (IV)-Promoted Grafting 2) Liying Wang Synthesis of Polylactide-b-Polylysine Copolymers 3) Hunter Little Probing the Conformation of Foldamers in Solution through Fluorescence Anisotropy 4) Ryan Amos Modification of Cooked Waxy Corn Starch with Maleated Compounds.
10:20 - 10:45	Coffee
10:45 - 11:05	Nicholas Lanigan Processable Bulk Supramolecular Polymers From Small Molecule Building Blocks
11:05 – 11:25	Alison Scott Facilitating Reactivity Ratio Estimation with the Error-in-Variables-Model: ‘prêt-à-porter’ computational package.
11:25 – 11:45	<u>5-Min. Mini Presentations</u> 5) Deepak Dharman Synthesis of Isoprenic Polybutadiene Macromonomers for the Preparation of Branched Polybutadiene 6) Shipei Zhu Production of Highly Mono Disperse Polymers by Evaporative Purification 7) Jasmine Zhang Study of the Interactions of Pyrene-Labeled SNPs with Sodium Dodecyl Sulfate (SDS) 8) Aleksander Cholewinski Underwater Adhesion and Mechanical Properties of Catechol-modified Alginate Hydrogels

12:00 - 1:00	Lunch
1:00 - 1:40	Industry Speaker: Dr. Andrew Kee Woodbridge Group Title: High-Performance Polyurethane Foams for Lower Mass Automotive Seating
1:40 – 2:00	Abdullah Ba Salem Probing the Interactions between Pyrene-labeled Gemini Surfactants and Non-Gemini Surfactants by Fluorescence
2:00 – 2:20	Remi Casier Predicting the Fraction of Mixing Between Latex Particles
2:20 - 2:40	Kate Stewart Sensory Array for Volatile Organic Compounds based on Doped Poly (o-ansidine)
2:40 - 3:00	Jesse Quinn , Chemical Engineering, Waterloo Nature-Inspired Polymers: Promising Materials for OTFT-Based Sensors (Winner of 2016 IPR Award for Academic Excellence in Polymer Science/Engineering)
3:00 - 3:20	Coffee
3:20 - 3:40	Lu li Conformation of the Side Chains of Amylopectin in DMSO Determined by Pyrene Excimer Fluorescence and Molecular Mechanics Optimizations
3:40 - 4:00	Janine Thoma Probing the Conformations of Pyrene Labeled PEGMA Polymeric Bottle Brushes in Solution by Pyrene Excimer Formation
4:00 - 4:20	Mohammed Awad Effect of ligands on controlled polymerization of Methyl Methacrylate by AGET ATRP in Emulsion System
4:20 – 4:40	Tori Hisko Fluorescently Labelled Latex Particles to Monitor Film Formation
4:40 – 5:00	Damin Kim Characterization of Hydrophobically Modified Starch Nanoparticles by Pyrene Fluorescence
5:00	Closing remarks
6:00 - 7:30	IPR Industrial Member DINNER University Club, Main Dining Room
7:30 - 9:00	Poster Presentations and Informal Get-together University Club, Main Dining Room (IPR graduate students/researchers and symposium participants)

Poster presentations follow on next page

**INSTITUTE FOR POLYMER RESEARCH
THIRTY-NINTH ANNUAL SYMPOSIUM
ON POLYMER SCIENCE/ENGINEERING 2017
POSTER SESSION
WEDNESDAY, MAY 3, 2017
UNIVERSITY CLUB
7:30 – 9:00 pm**

Boya Zhang Chem. Eng., Waterloo	Recovery of aroma compounds from dairy products by pervaporation
Zehou You Chemistry, Waterloo	Effect of Low Molecular Weight Polymer Diluent on Latex Film Formation
Alison Scott Chem. Eng., Waterloo	“EVM on a Chip”: Investigating Kinetic Behaviour of Copolymerizations
Janine Thoma Chemistry, Waterloo	Quantification of Long-Range, Polymer Chain Dynamics of a ‘Stiff Polymer’
Katherine Stewart Chem. Eng., Waterloo	Polymer-based Sensor Array for Multiple Volatile Organic Compounds
Mustafa Mohamed Shahwan Chem. Eng., Ryerson	Dynamic Modeling by Identification Technique of PVA Solution Degradation in a Tubular Photochemical Reactor
John Tam Chem. Eng., Ryerson	Kinetic study of SARA ATRP polymerization
Mohammed Awad Chem. Eng., Ryerson	Effect of Ligands on Controlled Polymerization of Methyl Methacrylate by AGET Method in Emulsion System
Faisal Sahul Hameed Chem. Eng., Ryerson	Modelling and Simulation of ARGET ATRP of BMA solution in Continuous Stirred Tank Reactor(CSTR)
Lu Li Chemistry, Waterloo	Conformation of the Side Chains of Amylopectin in DMSO Determined by Pyrene Excimer Fluorescence and Molecular Mechanics Optimizations
Damin Kim Chemistry, Waterloo	Characterization of Hydrophobically Modified Starch Nanoparticles with Pyrene Fluorescence

**THIRTY-EIGHTH ANNUAL SYMPOSIUM
ON POLYMER SCIENCE/ENGINEERING
May 3, 2017--CONRAD GREBEL COLLEGE**

LIST OF PARTICIPANTS

INDUSTRIAL GUEST SPEAKER

Dr. Andrew Kee

Woodbridge Foam Corporation
4240 Sherwoodtowne Boulevard

Mississauga, ON, L4Z 2G6

Tel: 289-245-4028

Eml: Andrew.Kee@Woodbridgegroup.com

Dr. Kevin Kulbaba

Arlanxo Canada Inc.

999 Collip Circle

London, Ontario

T: (519)953-1729

Eml: kevin.kulbaba@arlanxo.com

INDUSTRIAL PARTICIPANTS

Dr. Joel Goldstein

OMNOVA Solutions

2990 Gilchrist Road

Akron, OH 44305

T: (330) 794-6326

Eml: joel.goldstein@omnova.com

Dr. Prince Antony

3M Canada Company

453 Christina St. S. Sarnia, ON N7T 8C8

Tel: 519-857-3148

Eml: pantony@mmm.com

Dr. Mohsen Soleimani

BASF

1609 Biddle Avenue

Wyandotte

Tel: 734-324-2704

Eml: Mohsen.soleimani@basf.com

ACADEMIC PARTICIPANTS

Professor Jean Duhamel

Director, Institute for Polymer Research Department of
Chemistry

Tel: 519/888-4567 X 35916

Eml: jduhamel@sciborg.uwaterloo.ca

Professor Ramdhane Dhib

Dept. of Chemical Engineering, Ryerson

Tel: 416-979-5000 X6343

Eml: rdhib@ryerson.ca

Prof. Mario Gauthier

Dept. of Chemistry

Tel: 519-888-4567 X35205

Eml: Gauthier@uwaterloo.ca

Professor Costas Tzoganakis

Dept. of Chemical Engineering

Tel: 519/888-4567 X 33442

Eml: costas.tzoganakis@uwaterloo.ca

Professor Xianshe Feng

Dept. of Chemical Engineering

Tel: 519/888-4567 X36555

Eml: xfeng@uwaterloo.ca

Professor Yuning Li

Dept. of Chemical Engineering

Tel: 519-888-4567 X31105

Eml: yuning.li@uwaterloo.ca

Professor Neil McManus

Dept. of Chemical Engineering

Tel: 519/888-4567 X 37015

Eml: nmcmamus@uwaterloo.ca

Professor Alexander Penlidis

Dept. of Chemical Engineering

Tel: 519/888-4567 X 36634

Eml: penlidis@uwaterloo.ca

Professor Xiaosong Wang

Department of Chemistry

Tel: 519-888-4567 X31204

Eml: xiaosong.wang@uwaterloo.ca

Professor Boxin Zhao

Dept. of Chemical Engineering

Tel: 519-888-4567 X38666

Eml: zhaob@uwaterloo.ca

**THIRTY-EIGHTH ANNUAL SYMPOSIUM
ON POLYMER SCIENCE/ENGINEERING
May 3, 2017--CONRAD GREBEL COLLEGE**

LIST OF ORAL AND POSTER PRESENTERS

ORAL PRESENTERS

INDUSTRIAL GUEST SPEAKER

Dr. Andrew Kee
Woodbridge Foam Corporation
Andrew_Kee@Woodbridgegroup.com

INDUSTRIAL GUEST SPEAKER

Dr. Kevin Kulbaba
Arlanxeo
kevin.kulbaba@arlanxeo.com

**CHEMICAL ENGINEERING
WATERLOO**

Kate Stewart
k7stewart@uwaterloo.ca

Alison Scott
ajscott@uwaterloo.ca

Jesse Quinn
j4quinn@uwaterloo.ca

Mohammed Awad
mohammed.awad@ryerson.ca

Aleksander Cholewinski
alek.cholewinski@uwaterloo.ca

Jasmine Zhang
zhangqian0929@gmail.com

Liyang Wang
l358wang@uwaterloo.ca

**CHEMISTRY
WATERLOO**

Janine Lydia Thoma
jlthoma@uwaterloo.ca

Nicholas Lanigan
nfslanigan@uwaterloo.ca

Remi Casier
rjrcasier@uwaterloo.ca

Hunter Little
htlittle@uwaterloo.ca

Ryan Amos
r2amos@uwaterloo.ca

Joanne Fernandez
j4fernan@uwaterloo.ca

Deepak Dharmangadan
deepakvishnud@gmail.com

Lu Li
L83li@uwaterloo.ca

Damin Kim
d49kim@uwaterloo.ca

Abdullah Basalem
abasalem@uwaterloo.ca

Tori Hisko
vhisko@gmail.com

Nimer Murshid
nmurshid@uwaterloo.ca

POSTER PRESENTERS

**CHEMICAL ENGINEERING
WATERLOO**

Alison Scott
ajscott@uwaterloo.ca

Boya Zhang
boya.zhang1@gmail.com

Kate Stewart
k7stewart@uwaterloo.ca

Faisal Sahul Hammed
faisal.sahul@ryerson.ca

John Tam
j33tam@ryerson.ca

Mustafa Shahwan
mshahwan@ryerson.ca

**CHEMISTRY
WATERLOO**

Yehou You

Damin Kim
d49kim@uwaterloo.ca

Janine Lydia Thoma
jlthoma@uwaterloo.ca

**MEMBERSHIP LIST-2017
INSTITUTE FOR POLYMER RESEARCH**

Mr. Dan Pridemore
Afton Chemical Corporation
500 Spring Street
Richmond, VA 23219
Tel: 804-788-5169
Eml:
dan.pridemore@aftonchemical.com

Dr. Sharon Guo
Global Research and Development
Lanxess Inc.
Research Park
999 Collip Circle
London, ON N6G 0J3
Tel: 519-953-1720
Fax: 519-619-9117
Eml: sharon.guo@lanxess.com

Dr. Carla McBain
Omnova Solutions Inc.
2990 Gilchrist Road
Akron, OH 44305-4418
Tel: 330/794-6214
Fax: 330-794-6251
Eml: carla.mcbain@omnova.com

Dr. William H. Sachs
Princeton Polymer Consultants
3 Morgan Pl.
Princeton, N.J. 08540
Tel: 609/688-0314
Eml: wsachs@alumni.princeton.edu

Dr. James Taylor
Dr. Julien Mesnager
EcoSynthetix
3365 Mainway
Burlington ON L7M 1A6
T: (905) 335-5669
F: (289) 337-9780
Eml:jmesnager@ecosynthetix.com

Polyvation
Kadijick 7D
NL-9747, AT
Groningen, NL
Tel: 31-50-368-0777

Compuplast Canada
5333 Forest Hill Drive
Mississauga, ON L5M 5B7
Tel: 905-814-8923

Dr. James Taylor
BASF Corporation
1609 Biddle Ave., Wyandotte, MI,
USA 48192
Tel: 734-239-0036
Eml: james.w.taylor@basf.com

Preprints 2017

- 17-001 **Design of Sensitive and Selective Sensing Materials for Ethanol Detection**
K. Stewart and A. Penlidis*
Research Trends in Chemical Engineering Acc. 01/17
- 17-002 **Determination of properties and quality of GFRP reinforcing bars for concrete structures**
P. Arczewska, M. Polak and A. Penlidis*
Intern. J. of Mat. Eng. & Techn. Acc. 01/17
- 17-003 **Modelling Short and Long Term Time-dependent Nonlinear Behaviour of Polyethylene**
H. Sepiani, M. Polak* and A. Penlidis
J of Mechanics of Advanced Materials & Structures. Acc. 01/17
- 17-004 **Case Studies with Mathematical Modeling of Free-radical Multi-component Bulk/Solution Polymerizations: Part 2**
B. Dorschner, W. Jung, M. Riahinezhad, T. Duever, and A. Penlidis*
J Macromol. Sci., Pure & Appl. Chem. Acc. 01/17
- 17-005 **Using Pyrene Excimer Fluorescence to Probe Polymer Diffusion in Latex Films**
R. Casier, M. Gauthier*, J. Duhamel
Macromolecules. Acc. 02/17
- 17-006 **Coating cellulose nanocrystals on polypropylene and its film adhesion and mechanical properties**
J. d'eon, W. Zhang, L. Chen, R. Berry, B. Zhao*
Cellulose. Acc. 02/17
- 17-007 **AMPS/AAm/AAc Terpolymerization: Experimental Verification of the EVM Framework for Ternary Reactivity Ratio Estimation**
A. Scott, N. Kazemi, A. Penlidis*
Processes. Acc. 02/17
- 17-008 **Synthesis of Air-Stable CpFe(CO)₂(Fo) Polymers via Host-Guest Interaction of Cyclodextrin with Air-Sensitive Fp Pendent Groups**
N. Zhou, L. Peng, S. Salgado, J. Yuan, and X. Wang*
Angew Chem. Acc. 02/17
- 17-009 **Using Pyrene Excimer Fluorescence to Probe the Interactions between Viscosity Index Improvers and Waxes Present in Automotive Oil**
S. Pirouz, J. Duhamel*
Macromolecules. Acc. 03/17

- 17-010 **Analysis of Aluminium Brazing Sheet Differential Scanning Calorimetry Data**
M.J. Benoit^{1*}, M.A. Whitney¹, M.A. Wells¹, A. Penlidis², S. F. Corbin³, S. Winkler⁴
Intern. J. Exptl Design and Proc. Optim.. Acc. 03/17
- 17-011 **Direct Heteroarylation Polymerization: Guidelines for Defect-Free Conjugated Polymers**
T. Bura, S. Beaupré, M. Légaré, J. Quinn, E. Rochette, J. Blaskovits, F. Fontaine, A. Pron, Y. Li, M. Leclerc
Chemical Science, Acc. 01/17
- 17-012 **Effect of compositions of acceptor polymers on dark current and photocurrent of all-polymer bulk-heterojunction photodetectors**
L. Hu, W. Qiao, *, X. Zhou, X. Zhang, D. Ma, Y. Li, Z. Wang
Polymer, Acc. 02/17
- 17-013 **Instantaneous Carbonization of Acetylenic Polymer into Highly Conductive Graphene-like Carbon and Its Application in Lithium-Sulfur Batteries**
L. Yan, D. Han, M. Xiao, S. Ren, Y. Li, S. Wang and Y. Meng
Journal of Materials Chemistry A. Acc. 01/17
- 17-014 **Side-chain engineering for fine-tuning of molecular packing and nanoscale blend morphology in polymer photodetectors†**
L. Hu, W. Qiao, X. Zhou, J. Han, X. Zhang, D. Ma, Y. Li and Z. Wang*
Polymer Chemistry., Acc. 03/17
- 17-015 **Long-Range, Polymer Chain Dynamics of a ‘Stiff’ Polymer. Fluorescence from Poly(isobutylene-*alt*-maleic anhydride) with *N*-(1-pyrenylemethyl)succinimide Groups**
J. Thoma, J. Duhamel, M. Li, M. Bertocchi, and R. Weiss
Macromolecules, Acc. 04/17
- 17-016 **New 3,3’-(thane-1,2-diylidene)dis(indolin-2-one)(EBI)-based small molecule semiconductors for organic solar cells**
M. Le Borgne, J. Quinn, J. Martin, N. Stingelin, Y. Li*, and G. Wantz*
Journals of Materials Chemistry C, Acc. 04/17
- 17-017 **Flexibility and Stability of Metal Coordination Macromolecules**
H. Jiang, D. Geng, D. Liu, N. Lanigan, and X. Wang*
Chemistry a European Journal, Acc. 05/17
- 17-018 **Evaluating the Performance of Tailor-made Water-soluble Copolymers for Enhanced Oil Recovery Polymer Flooding Applications**
M. Riahi-zhad, L. Romero-Zeron, N. McManus, A. Penlidis*
Fuel, Acc. 04/17

- 17-019 **Comparison of Polymer Networks Synthesized by Conventional Free Radical and RAFT Copolymerization Processes in Supercritical Carbon Dioxide**
P. Pérez-Salinas, G. Jaramillo-Soto, A. Rosas-Aburto, H. Vázquez-Torres, M. Bernad-Bernad, Á. Licea-Claverie, and E. Vivaldo-Lima,*
Processes, Acc. 04/17
- 17-020 **Regioisomerism of alkyl-substituted bithiophene comonomer in (3*E*,8*E*)-3,8-bis(2-oxoindolin-3-ylidene)naphtho-[1,2-*b*:5,6-*b'*]difuran-2,7(3*H*,8*H*)-dione (INDF) based D-A polymers for organic thin film transistors**
J. Quinn, C. Guo, F. Haider, H. Patel, D. Khan, and Y. Li*
Journal of Materials Chemistry C, Acc. 05/17
- 17-021 **Modeling of Superacid Catalyzed Step-growth Polymerization of Isatin and Biphenyl or Terphenyl Monomers**
J.E. Romero-Hernandez, A. Cruz-Rosada, M. G. Zolotukhin and E. Vivaldo-Lima,*
Macromolecular Theory & Simulations, Acc. 06/17
- 17-022 **Visualization of bivariate sequence length-chain length distribution in free radical copolymerization**
M.R. Saeb, Y. Mohammadi*, H. Rastin, T. S. Kermaniyan, and A. Penlidis*
Macromolecular Theory & Simulations, Acc. 06/17
- 17-023 **Water Soluble Polymers Editorial Notes**
A. Penlidis
Macromolecular Theory & Simulations, Acc. 06/17
- 17-024 **RAFT Polymerization: A Review on Mathematical Modeling and Model Discrimination using Sequential Bayesian Methodology**
S. Masoumia, T. Duever, A. Penlidis, R. Azimid, P. López-Domínguez and E. Vivaldo-Lima*
Current Organic Chemistry, Acc. 07/17
- 17-025 **An aromatic amine-containing polymer as an additive to ambipolar polymer semiconductor realizing unipolar n-type charge transport**
Y. He,^a J. Quinn,^a S. Lee,^a G. Ying Wang,^a X. Li,^b J. Wang,^b and Y. Li*^a
Organic Electronics, Acc. 07/17
- 17-026 **Recent progress in developing n-type organic semiconductors for organic field effect transistors**
J. Quinn, J. Zhu, X. Li, J. Wang, and Y. Li*
Journal of Materials Chemistry C, Acc. 08/17
- 17-027 **An aromatic amine-containing polymer as an additive to ambipolar polymer semiconductor realizing unipolar n-type charge transport**
Yinghui He,^a Jesse Quinn,^a Suhyun Lee,^a Guan Ying Wang,^a Xu Li,^b Jinliang Wang,^b and Yuning Li*^a
Organic Electronics, Acc. 07/17

- 17-028 **An aromatic amine-containing polymer as an additive to ambipolar polymer semiconductor realizing unipolar n-type charge transport**
Yinghui He,^a Jesse Quinn,^a Suhyun Lee,^a Guan Ying Wang,^a Xu Li,^b
Jinliang Wang,^b and Yuning Li*,^a
Organic Electronics, Acc. 07/17
- 17-029 **An aromatic amine-containing polymer as an additive to ambipolar polymer semiconductor realizing unipolar n-type charge transport**
Yinghui He,^a Jesse Quinn,^a Suhyun Lee,^a Guan Ying Wang,^a Xu Li,^b
Jinliang Wang,^b and Yuning Li*,^a
Organic Electronics, Acc. 07/17
- 17-030 **Asymmetric soft-hard colloidal mixtures: osmotic effects, glassy states and rheology**
M. Merola, D. Parisi, D. Truzzolillo, D. Vlassopoulos, V. Deepak, and M. Gauthier
Journal of Rheology, Acc. 08/17
- 17-031 **Copolymerization**
A. Scott and A. Penlidis
Elsevier Reference Modules in Chemistry, Molecular Sciences and Chemical Engineering, Acc. 07/17
- 17-032 **Monomolecular films of arborescent polystyrene–graft–poly(2-vinylpyridine) copolymers: Precursors to nanostructured carbon materials**
M. Huh, M. Gauthier and s. Il Yun
European Polymer Journal, Acc. 08/17
- 17-033 **Arborescent Unimolecular Micelles: Poly (γ -Benzyl L-Glutamate) Core Grafted with a Hydrophilic Shell by Copper(I)-Catalyzed Axide-Alkyne Cycloaddition Coupling**
M. Gauthier and G. Whitton
Polymers, Acc. 010/17
- 17-034 **Smart Biomimetic Micro/Nanostructures Based on Liquid Crystal Elastomers and Networks**
H. Shahsavan, L. Yu, A. Jakli, B. Zhao
Royal Society of Chemistry, Acc. 10/17
- 17-035 **Modeling of RAFT Copolymerization with Crosslinking of Styrene/Divinylbenzene in Supercritical Carbon Dioxide**
P. López-Domínguez, J. César Hernández-Ortiz, E. Vivaldo-Lima*
Macromolecular Theory and Simulations, Acc. 10/17
- 17-036 **A Small bandgap (3E,7E)_3,7-bis(2-oxoindolin-3-ylidene)benzo[1,2-b:4,5']difuran-2,6(3H,7H)-dione (IBDF) based polymer semiconductor for near-infrared organic phototransistors**
Y. He, J. Quinn, D. Hou, J. Ngai and Y. Li*
Royal Society of Chemistry, Acc. 11/17

- 17-037 **Characterization of the Distribution of Pyrene Molecules in Confined Geometries with the Model Free Analysis**
X. Cao, R. Casier, H. Little, and J. Duhamel*
Journal of Physical Chemistry B., Acc. 11/17
- 17-038 **Heuristic Search Strategy for Transforming Microstructural Patterns to Optimal Copolymerization Recipes**
Y. Mohammadi, M. R. Saeb, and A. Penlidis*
Macromol. Theory & Simul., Acc. 12/17
- 17-039 **Crystal-to-crystal transition of ultrasoft colloids under shear**
J. Ruiz-Franco, J. Marakis, N. Gnan, J. Kohlbrecher, M. Gauthier, M.P. Lettinga, D. Classopoulos, E. Zaccarelli
Physical Review Letters, Acc. 12/17

Research Personnel (SUPERVISOR)

NAME	CAT	DEPT	TD	JD	RD	XF	MG	YL	NMc	AP	MT	CT	XW	BZ	THESIS/PROJECT TOPIC	COMPL. DATE
A. Albiladi	1	ChE				X									Seawater desalination by membranes	Dec 18
M. Alsehli	2	Chem					X								Arborescent polypeptide micelles (Saudi Arabia Scholarship)	Apr 17
P. Arczewska	2	CivE								X					Polymeric fibre-reinforced bars (co-supervised with Prof MA Polak, Civ Eng)	May 17
A. Alturk	2	Chem					X								Arborescent Polybutadiene Synthesis and Rheology	Aug 18
R. Amos	2	Chem					X								Hydrophobic Modification of Starch Nanoparticles	Aug 18
F. Awan	1	Chem									X				Functionalized CNC for cosmetic applications	May 17
K. Cao	2	Chem											X		Synthesis and self-assembly of iron carbonyl polymers	May 16
R. Casier	2	Chem		X			X								Probing Protein Folding by Pyrene Excimer Fluorescence	Dec 19
L. Chen	2	Chem									X				Development of hybrid cellulose nanocrystals for chemical applications	Jan 17
S. Chen	2	ChE				x									Membranes for gas separations	Dec 19
A. Cholewinski	2	ChE												x	Functionalized alginate tissue adhesives	Aug 18
M. Celarek	1	ChE				x									Oily water treatment with membranes	Aug 17
L. DaPeng	2	Chem											X		Self-assembly of PFpP for functional nanomaterials	Sep 18
N. Dasgupta	1	Chem					X								Synthesis of Thermosensitive Polymer-Grafted Starch Nanoparticles	
Y. Deng	3	ChE						X							Polymer semiconductors	Jan 16
J. Ellard	1	ChE						X							Thiophene-S,S-dioxidized Indophenine for Use in Organic Field-effect Transistors	Dec 16
H. Essawi	2	ChE				x									Membranes for dialysis applications	Aug 16
S. Farhangi	2	Chem		X											Characterizing polymer chain dynamics in solution of various polymeric backbones by pyrene excimer formation by pyrene excimer formation	May 16
M.U. Farooq	1	ChE										X			UV modification of ethylene copolymers	May 16
J. Fernandez	2	Chem					X								Grafting of Starch Nanoparticles	Aug 18
A.. Gao	1	ChE				x									Desalination of high salinity water	Apr 16
D. Geng	1	Chem											X		Synthesis of metal carbonyls polymers for chain conformation characterization	2017

1 = MASc 2 = PhD 3 = Postdoctoral Fellow 4 = Res. Associate 5 = Technician

TD=T.A. Duever JD=J. Duhamel RD=R. Dhib XF=X. Feng JF=J.Forrest MG=M. Gauthier YL=Y.Li NMc=N. McManus AP=A. Penlidis MT=M. Tam CT=C. Tzoganakis XW=X.Wang BZ=B. Zhao

NAME	CAT	DEPT	TD	JD	RD	XF	MG	YL	NMc	AP	MT	CT	XW	BZ	THESIS/PROJECT TOPIC	COMPL. DATE
K. Gholami	1	Chem		X											Associations between EP copolymers in Base Oils Probed by Fluorescence	Sep 16
N. Grishkewich	2	Chem									X				Sustainable nanomaterials for water treatment	May 18
E. Halakoo	2	ChE				x									Wastewater treatment with membranes	Aug 18
Y. He	2	ChE						X							New polymer semiconductors for printed electronics	Sep 17
V. Hisko	1	Chem		X			X								Effect of Linker Length between Pyrene and PBMA to Probe Interparticle Polymeric Diffusion	Aug 17
Y. Huang	2	ChE				X									Micelle-enhanced ultrafiltration	Jan 16
M. Iqbal	2	ChE				X									Wastewater treatment by membranes	Dec 20
G. Kaminskao	2	Chem									X				Double water emulsion systems	Aug 19
D. Kim	1	Chem		X											Characterization of Modified Starch Nanoparticles by Fluorescence	Sep 16
S. Lai	2	ChE				X									Heavy metal removal from waste water	Aug 16
K Liew	1	ChE												x	Hydrogel-based functional materials	Apr 17
N. Lanigan	2	Chem											X		Supramolecular polymerization of metal carbonyls in solid state	Dec 18
M. Le Borgne	2	ChE						X							Solution-processable oligomeric and small molecule semiconductors for organic solar cells	Sep 16
L. Li	2	Chem		X											Intrinsic Properties of Starch Nanoparticles Probed by Pyrene Excimer Fluorescence	Aug 16
D. Liu	2	Chem											X		Self-assembly of metal carbonyl polymers	2018
B. Mahi	2	Chem					X								Synthesis of pH-responsive Arborescent Amphiphilic Copolymers based on Glycine and Benzyl Glutamate	
H. Manston	2	ChE				X									Membranes for environmental applications	Aug 19
H. Meng		ChE						X							Polymer semiconductors for solar cells	Aug 18
N. Mohammed	2	ChE									X				Removal of organic dyes using functional cellulose nano crystals in polymer beads	Sep 17
N. Murshid	2	Chem											X		Aqueous self-assembly of metal carbonyl building blocks	Sep 17
M. Neqal	2	Chem					X								Smart Polymeric Nanomaterials by ROMP	Aug 17
J. Ngai	1ChE							X							Polymer Solar Cells	Dec 20
Z. Pan	2	ChE												X	Development of low friction and oleophobic coating materials	Sep 16
Y. Quan	4	ChE				X									Wastewater treatment with membranes	Aug 17
B. Qiu	1	ChE				X									Waste water treatment by absorption	Aug 16

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MT=M. Tam CT=C. Tzoganakis XW=X.Wang BZ=B. Zhao

NAME	CAT	DEPT	TD	JD	RD	XF	MG	YL	NMc	AP	MT	CT	XW	BZ	THESIS/PROJECT TOPIC	COMPL. DATE
L. Qiu	4	ChE				x									Removal of organic contaminants from water by pervaporation	Aug 16
J. Quinn	2	ChE						X							N-type polymer semiconductors for printed electronics	Sep 17
M. Rahman	2	Chem											X		Synthesis and characterization of non-iron metal-carbonyls	Sep 18
M. Reza	2	ChE				X									Membrane bioreactor for wastewater treatment	Aug 16
M. Riahinezhad	3	ChE								x					Product design criteria for water-soluble polymers	Apr 16
Alison Scott	2	ChE								x					Design criteria for novel functional polymeric materials for specific applications	Aug 19
H. Sepiani	2	CivE								X					Finite element analysis of polymeric fibre-reinforced bars (co-supervised with Prof MA Polak, Civ Eng)	Dec 16
H. Shahsavan	2	ChE												x	Gecko-inspired smart adhesives	Dec 16
S.Shi	3	Chem											X		Supramolecular metal carbonyl materials	2017
K. Stewart	2	ChE								X					Polymeric sensors for the detection of toxic analytes	Aug 16
K. Stewart	3	ChE								x					Polymeric sensors for aqueous analytes	Dec 17
B. Sun	2	ChE						X							High Performance n-Type Polymer Semiconductors for Printed Logic Circuits	Jan 16
Y. Song	1	Chem									X				Functionalisation of cellulose nanocrystals	Sep 16
J. Tang	2	ChE									X				Development of functionalised cellulose nano crystals for Pickering emulsion stabilization	Sep 17
J. Thoma	1	Chem		X											Characterization of Polymeric Bottlebrushes by Pyrene Excimer Fluorescence	Aug 17
J. Trinidad	1	ChE												x	Electrically conductive nanocomposite	Aug 16
D. Vishnu	4	Chem					X								Synthesis of controlled architecture polymers	Aug 17
H. Waheed	2	ChE				x									Interfacially polymerization for membrane formation	Apr 16
T. Wang	3	ChE												x	Advanced nanocomposite adhesives	May 17
W. Wang	3	ChE				x									Nanostructured membranes	Dec 16
X. Wang	1	ChE													Degassing membranes	Aug 18
A.Worku	2	Chem					X								Arborescent Micelles from Polyelectrolyte Complexes	Aug 17
D. Wu	3	ChE				X									Nanofiltration membranes	Aug 16
X. Wu	2	ChE									X				Conductive Cellulose Nanocrystals for Next Generation Energy Storage	Sep 16
J. Xu	2	ChE				X									Air pollution control	Aug 19

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NAME	CAT	DEPT	TD	JD	RD	XF	MG	YL	NMc	AP	MT	CT	XW	BZ	THESIS/PROJECT TOPIC	COMPL. DATE
X. Xu	2	ChE				X									Surface modification of membranes	Dec 17
F. Yang	2													x	Mussel-inspired hydrogel bonding solution	Aug, 17
Y. Yang	2	ChE						X							Electrodeposition of p-Type Cuprous Oxide and its Application in Oxide Solar Cells	Jan 17
S. Zeggian	3	Chem									X				Polydopamine Cellulose Nanocrystals	Aug 16
B. Zhang	2	ChE				X									Aroma compound recovery from aqueous solutions	Dec 16
Z. Zhang	2	Chem									X		X		Crystal nano cellulose materials via polymer modification	2017
N. Zhou	1	Chem											X		Synthesis and characterization of metal carbonyl side chain polymers	Sep 16
X. Zhou	1	Chem									X				Functional colloids for flocculation applications	May 16
J. Zhu	2	ChE						X							Organic thin film transistor chemical sensors	Aug 18

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MT=M. Tam CT=C. Tzoganakis XW=X. Wang BZ=B. Zhao

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