



*Department of Chemistry and Technology of Polymers
Faculty of Chemical Engineering and Technology
Cracow University of Technology*

**7th INTERNATIONAL SEMINAR ON MODERN
POLYMERIC MATERIALS FOR ENVIRONMENTAL
APPLICATIONS**

including

Special Session

‘Recent Advances in Polymer Nanocomposites and Hybrid Materials’

Kraków, 15–17 May, 2019

PROGRAM



7th INTERNATIONAL SEMINAR ON MODERN POLYMERIC MATERIALS
FOR ENVIRONMENTAL APPLICATION

SCIENTIFIC COMMITTEE

Serge Bourbigot, Lille
Baljinder Kandola, Bolton
Marek Kozłowski, Wrocław
Piotr Król, Rzeszów
Yusuf Menciloglu, Istanbul
Michele Modesti, Padova
James Njuguna, Aberdeen
Maria Omastova, Bratislava
Jan Pielichowski, Kraków
Polycarpos Pissis, Athens
Aleksander Prociak, Kraków
Marian Zaborski, Lodz
Krzysztof Pielichowski, Kraków

ORGANIZING COMMITTEE

Krzysztof Pielichowski – Chairman
Elżbieta Czaja
Tomasz Majka
Paulina Radzik
Jacek Wójcik

15 May (Wednesday)

- 17.00-19.30 Registration
18.00-20.00 Welcome Party

16 May (Thursday)

- 09.00-09.20 **Opening of the Seminar:**
- Prof. Tadeusz Tatara, Vice-Rector for Science of the Cracow University of Technology,
 - Prof. Dariusz Bogdał, Dean of the Faculty of Chemical Engineering and Technology,
- Chairman:** Marek Kozłowski
- 09.20-09.50 Serge Bourbigot, J. Sarazin, G. Okayay, P. Tranchard, F. Samyn, M. Jimenez (KEYNOTE)
“Novel methods for characterizing intumescent polymeric materials upon burning”
- 09.50-10.10 Andrzej Rybak, Renata Porębska, Robert Sekuła
“Environmentally-friendly polymer composites for application as electrical insulation in energy distribution devices”
- 10.10-10.30 Marek Piątkowski, Julia Radwan-Pragłowska, Łukasz Janus, Aleksandra Sierakowska
“Biodegradable scaffolds based on fungal chitosan”
- 10.30-10.50 Monika Flejszar, Paweł Chmielarz
“Synthesis of PBA brushes by grafting from silicon wafers via ATRP methods”
- 10.50-11.10 **Coffee Break**

Chairman: Mária Omastová

11.10-11.40 Marek Pyda, Anna Czerniecka-Kubicka, Agata Drogoń
(KEYNOTE)
“Physical aging of biodegradable polymers: polylactide and poly(3-hydroxybutyrate) by advanced thermal analysis”

11.40-12.00 Chi Hu, Serge Bourbigot, Thierry Delaunay, Marion Collinet, Sophie Marcille, Gaëlle Fontaine
“Improvement of Polybutylene Succinate flame retardancy”

12.00-12.20 Magdalena Maciejewska
“Organic zinc salts as pro-ecological activators for sulfur vulcanization of elastomers”

12.25-13.50 **Lunch**

Special Session: ‘Recent Advances in Polymer Nanocomposites and Hybrid Materials’

Chairman: James Njuguna

13.50-14.20 Ignazio Blanco (KEYNOTE)
“The rebirth of POSS: state of the art and future developments in polymer reinforcement”

14.20-14.40 Rita Varga, Kristóf Molnár, Tordai Hedvig, Nagy Krisztina, Angéla Jedlovszky-Hajdú
“Poly(aspartic acid) based nano gel fibers for cell culturing”

14.40-15.00 Ewa Szefer, Agnieszka Leszczyńska, Paulina Radzik, Krzysztof Pielichowski
“Surface modification of CNC with succinic anhydride under microwave radiation and its application for biopolyamide 10.10 nanocomposites”

15.00-15.20 Dóra Noémi Barczikai, Anikó Tóth, Viktória Kacsari, Luca Laub, Gabriella Csík, Angéla Jedlovszky-Hajdú
“Synthesis and application of biocompatible poly(amino acid) meshes with antibacterial properties”

15.20-15.40 **Coffee Break**

Chairman: Serge Bourbigot

15.40-16.10 S. Ingram, P. Jenkins, S. Siddique, S. Khan, A. Usman, K. Starost, A. MacPherson, P Bari, S Mishra, J. Njuguna (KEYNOTE)
“Graphene/epoxy fibre reinforced composites for impact performance structures”

16.10-16.30 Kinga Pielichowska, Klaudia Król-Morkisz, Katarzyna Nowicka, Piotr Szatkowski
“Functionalized nanohydroxyapatite as thermal stabilizer for polyoxymethylene”

16.30-16.50 Konstantinos N. Raftopoulos, Patrycja Tworzydło, Stefanos Koutsoumpis, Anna Grzybowska, Jan Ozimek, Edyta Hebda, Apostolos Kyritsis, Krzysztof Pielichowski
“Calorimetric and dynamic glass transition in POSS-containing polyurethane systems”

17.00-19.00 **Poster session**

20.00 **Gala Dinner**

17 May (Friday)

Chairman: Ignazio Blanco

09.00-09.30 Janusz Datta, Patrycja Jutrzenka Trzebiatowska, Ewa Głowińska, Marcin Włoch (KEYNOTE)
“A new approach to thermo-chemical decomposition study of polyurethanes waste and examples of usage of the recovered intermediates”

09.30-09.50 Maciej Guzik (INVITED)
“Production and applications of bacterially synthesized polymer – polyhydroxyalkanoate”

09.50-10.10 Małgorzata Latos-Brózio, Anna Masek

“Impregnation of biodegradable polyesters with substances of plant origin – chlorophyll and curcumin”

10.10-10.30 Dominika Czachor, Barbara Pilch-Pitera, Małgorzata Walczak, Beata Mossety-Leszczak
“Environmental friendly coatings for painting substrates with low thermal resistance”

10.30-10.50 Katarzyna Jankowska, Jakub Zdarta, Szymon Jędrzejak, Ewa Kijeńska-Gawrońska, Teofil Jesionowski
“Electrospun materials as supports for enzyme immobilization”

10.50-11.10 **Coffee Break**

Chairman: Piotr Król

11.10-11.40 Theodora Krasia-Christoforou (KEYNOTE)
“Polymer-based fibrous mats in water remediation processes”

11.40-12.00 Gernot Oreski (INVITED)
“Polymers in crystalline silicon photovoltaic modules: Challenges in material development and reliability assessment”

12.00-12.20 Mária Gavendová, Vladimíra Krmelová, Tomáš Zatroch, Bibiana Bizubová, Michal Kleščík, Mária Straková
“Investigation of the various nucleating agents effect on the properties of pre-oriented polypropylene fibres”

12.25-13.50 **Lunch**

Chairman: Aleksander Prociak

13.50-14.20 Mária Omastová (KEYNOTE)
“Polymeric composite nanofibers prepared by electrospinning for advanced application”

14.20-14.40 M. Peñas-Caballero, J. Araujo-Morera, Saúl Utrera, M. Hernández-Santana, M. López-Manchado, R. Verdejo (INVITED)
“Self-healing polymer composites”

14.40-15.00 Katarzyna Haraźna, Liliana Szyk-Warszyńska, Małgorzata Witko, Maciej Guzik
“Preparation and characterisation of bacterial polyester - polyhydroxyoctanoate (PHO) and its use for wound healing”

- 15.00-15.20 Anna Kufel, Stanisław Kuciel
“Study on mechanical properties of basalt fibre reinforced polypropylene composites”
- 15.20-15.40 **Coffee Break**
- Chairman:** Theodora Krasia-Christoforou
- 15.40-16.00 Szczepan Bednarz
“Renewable Polymers from Itaconic Acid: Synthesis and Structure”
- 16.00-16.20 Monika Topa
“Novel efficient photoinitiating systems for dental light-cure composite resins”
- 16.20-16.40 Maria Kurańska, Krzysztof Polaczek, Aleksander Prociak
“Modified used cooking oils as environmentally friendly reactive components for modern polymeric materials”
- 16.40-17.00 Paweł Fiedor
“Novel UV-A and visible light photoinitiating systems dedicated for 3d printing”
- 17.00-17.20 Krisztina Tóth, Dávid Juriga, Miklós Zrínyi, Gábor Varga, Angéla Jedlovsky-Hajdú, Krisztina Nagy
“Characterisation of poly(aspartamid) based nanofibrous dopamine conjugates”
- 17.20-17.30 **Closing of the Seminar**

Posters

1. Katarzyna Bialik-Wąs, Anna Ledwoń, Dagmara Malina, Klaudia Pluta, Tomasz Majka
Preparation and characterization of alginate/Aloe vera hydrogel films for biomedical applications
2. Katarzyna Bialik-Wąs, Karolina Banak, Dagmara Malina, Krzysztof Pielichowski
Studies on the influence of the environment on the drug release from PHAs nanocarriers
3. Artur Bukowczan, Edyta Hebda, Sławomir Michałowski, Krzysztof Pielichowski
Modification of flexible polyurethane foams based on tolylene-2,4-diisocyanate by polyhedral oligomeric silsesquioxanes (POSS)
4. Dominika Czachor, B. Pilch-Pitera, K. Tabin, P. Biedka, Ł. Byczyński, M. Kisiel, M. Dutkiewicz
Anti-corrosion and chromium-free powder clear coatings
5. Ewelina Chmiel, Jacek Lubczak
Polyurethane foams with 1,3,5-triazine ring, silicon and boron atoms
6. Ewelina Chmiel, Marzena Szpiłyk, Jacek Lubczak
Thermostable polyurethane foams with 1,3,5-triazine ring and silicon atoms
7. Anna Czerniecka-Kubicka, Wiesław Frącz, Marek Pyda
The quantitative thermal analysis of biodegradable nanocomposites based on poly(3-hydroxybutyrate)
8. Teresa Czytajło, Sławomir Michałowski
Effect of nanosilica on selected properties of polyurethane elastomers
9. Anna Drabczyk, Sonia Kudłacik-Kramarczyk, Magdalena Głąb, Bożena Tylińczak
Studies on the release of the active substance from polymeric drug carriers
10. Anna Drabczyk, Magdalena Kędzierska, Sonia Kudłacik-Kramarczyk, Bożena Tylińczak
Functionalized magnetic nanoparticles for application in anticancer treatment
11. Agata Drogoń, Marek Pyda
Physical aging of biodegradable polylactide
12. Karolina Dzieciółowska, Joanna Ortyl, Anna Chachaj-Brekiesz, Monika Topa
Derivatives of Coumarin as Fluorescent Probes for Monitoring Photopolymerization Processes by Fluorescence Probe Technology
13. Anna Dziemidkiewicz, Magdalena Maciejewska

- Novel environmentally friendly curing system for brominated butyl rubber*
14. Monika Flejszar, Paweł Chmielarz, Karol Wolski, Gabriela Grześ
Grafting of PBA and PHEA brushes from silicon wafer surfaces via SARA ATRP
 15. Monika Flejszar, Paweł Chmielarz, Karol Wolski, Gabriela Grześ
Synthesis of PNIPAM polymer brushes via surface initiated SARA ATRP in aqueous media
 16. Wioletta Florkiewicz, Dagmara Malina, Klaudia Pluta, Agnieszka Sobczak-Kupiec
Silver nanoparticles preparation with the use of Cistus incanus
 17. Dorota Głowacz-Czerwonka
Oligoetherols with an azacyclic ring as substrates for obtaining polyurethane foams with reduced flammability
 18. Dorota Głowacz-Czerwonka
Polyurethane foams containing oligoetherol based on a reactive solvent of melamine: synthesis and flammability studies
 19. Alicja Gruchała, Emilia Hola, Joanna Ortyl
The response of terphenyl derivatives to changes of medium polarity and microviscosity during cationic and free-radical polymerization of a monomers
 20. Emilia Hola
Terphenyl derivatives as highly versatile co-initiators/sensitizers for photopolymerization upon exposure to visible light
 21. Katarzyna Jankowska, Jakub Zdarta, Adam Grzywaczyk, Ewa Kijeńska-Gawrońska, Teofil Jesionowski
Electrospinning method in biodegradation of pollution from aqueous solutions
 22. Magdalena Jankowska, Joanna Ortyl, Mariusz Galek, Emilia Hola
New highly efficient photoinitiating systems for cationic and radical photopolymerization reactions under soft conditions
 23. Łukasz Kłapiszewski, Karol Bula, Teofil Jesionowski
Inorganic-organic hybrid materials as pro-ecological polymer fillers
 24. Piotr Król, Bożena Król, Łukasz Uram, Kinga Pielichowska, Marta Sochacka-Piętal, Małgorzata Walczak
The study of biological properties of polyurethane elastomers for medical applications
 25. Sonia Kudłacik-Kramarczyk, Magdalena Kędzierska, Anna Drabczyk, Bożena Tyliszczak
The impact of the reaction conditions of the synthesis of albumin based drug carriers on the properties of obtained carriers
 26. Sonia Kudłacik-Kramarczyk, Magdalena Kędzierska, Anna Drabczyk, Magdalena Głąb, Bożena Tyliszczak
Preparation of wound dressings based on polysaccharides and proteins
 27. Aleksandra Lach, Katarzyna Nowicka, Kinga Pielichowska

- Polyurethane-based multifunctional bone cements modified with magnetic nanoparticles*
28. Aleksandra Lach, Aleksandra Pietrucha, Izabela Trzeciecka, Kinga Pielichowska
Gellan gum-based hydrogels modified with graphene oxide and hydroxyapatite for cartilage tissue regeneration
29. Dominik Szczęch, Renata Lubczak, Marzena Szpiłyk
Comparison of properties of polyurethane foams obtained from various oligoetherols with starch units
30. Dominik Szczęch, Renata Lubczak, Rafał Oliwa, Marzena Szpiłyk
Flame retardance of polyurethane foams with starch units
31. Monika Witek, Agnieszka Świętoń, Tomasz M. Majka
Tear resistance determination of two paper surfaces adhesively bonded with fast polylactide adhesives (FPA)
32. Klaudia Złotowska, Magdalena Kulig, Tomasz M. Majka
Influence of pyrolysed filler on recycled PET flammability
33. Elżbieta Malewska, Maria Kurańska, Aleksander Prociak
Synthesis and properties of bio-polyols obtained by transamidation of waste cooking oil
34. Anna Marzec, Bolesław Szadkowski, Jacek Rogowski, Marian Zaborski
Characterization and properties of new hybrid pigments based on aluminum-magnesium hydroxycarbonate and azo dye
35. Olga Mielcarek, Anna Masek
Composites of Epoxidized Natural Rubber (ENR) and Polycaprolactone (PCL) Containing Cellulose Fibres and Modified Montmorillonite
36. Olga Mielcarek
The effect of photo-aging process on surface energy of aliphatic polyesters stabilized with flavonoids
37. Joanna Ortyl, Wiktoria Tomal, Patryk Szymaszek
Photopolymerization of Cationic and Free-radical Monomers under Visible Light Using New Photoinitiating Systems
38. Jan Ozimek, Edyta Hebda, Krzysztof Pielichowski
The influence of POSS molecules on phase separation of linear polyurethanes based on polyols with different molecular weight
39. Joanna Pagacz, Artur Oziębło
Bioinspired materials – state of the art and brief presentation of future trends
40. Klaudia Ordon, Justyna Sasiak, Monika Szlachta, Kinga Pielichowska
Polyurethanes chemically modified with sodium alginate for biomedical applications
41. Maciej Pilch, Joanna Ortyl, Anna Chachaj-Brekiesz, Roman Popielarz
Stability study of new europium(III) complexes for the role of highly selective luminescent sensors for monitoring the temperature of the system

42. Paulina Radzik, Ewa Szefer, Agnieszka Leszczyńska, Krzysztof Pielichowski
The influence of the nanocellulose filler on selected properties of CNC/PA10.10 biocomposites
43. Ewa Szefer, Agnieszka Leszczyńska, Paulina Radzik, Krzysztof Pielichowski
Biocomposites of polyamide and surface modified cellulose nanocrystals
44. Anna Sienkiewicz, Piotr Czub
Bio-based fillers for polymer composites
45. Agnieszka Sobczak-Kupiec, Wioletta Florkiewicz, Dagmara Malina, Klaudia Pluta, Bożena Tyliczyczak
Silver nanoparticles preparation with the use of Silybum marianum
46. Anna Sowińska, Magdalena Maciejewska
Proecological rubber composites with reduced content of zinc
47. Łukasz Szajnecki, Magdalena Sobiesiak
Application of superabsorbents based on crosslinked poly(sodium acrylate) in control release systems
48. Magdalena Sobiesiak, Barbara Gawdzik, Łukasz Szajnecki
Dynamic sorption of heavy metal ions on DVB-GMA based porous polymers
49. Piotr Stachak, Edyta Hebda, Krzysztof Pielichowski
Nanostructured hybrid composites: non-isocyanate polyurethane/functionalized POSS
50. Bolesław Szadkowski, Anna Marzec, Marian Zaborski
Effect of hybrid pigment based on hydrotalcite and azo chromophore on the properties and stability of ethylene-norbornene composites
51. Piotr Szatkowski, Alina Ragan, Kinga Pielichowska
The influence of different cellulose forms on the properties of polyurethane matrix composites
52. Piotr Szatkowski, Monika Szlachta, Klaudia Ordon, Kinga Pielichowska
Preparation and properties of polyurethanes chemically modified with chitosan
53. Evelin Sipos, Miklós Zrínyi
Mechanical properties of planar fibrous networks
54. Piotr Szymaszek, Joanna Ortyl, Paweł Fiedor, Anna Brekiesz-Chachaj, Maciej Pilch
Applicability of Selected 2-amino-4,6-diphenyl-pyridine-3-carbonitrile Derivatives for Monitoring of Free-radical and Thiol-ene Photopolymerization by Fluorescence Probe Technology
55. Wiktoria Tomal, Joanna Ortyl
High performance photoinitiating systems dedicated to photocurable coatings
56. Konstantinos N. Raftopoulos, Patrycja Tworzydło, Jan Ozimek,

- Panagiotis Klonos, Edyta Hebda, Apostolos Kyritsis, Krzysztof Pielichowski
Calorimetric and Dynamic Glass Transition in Polyurethanes with Flexible Hard Segments cross-linked with POSS
57. Izabela Łukaszewska, Konstantinos N. Raftopoulos, Artur Bukowczan, Edyta Hebda, Apostolos Kyritsis, Krzysztof Pielichowski
Calorimetric and Dynamic Glass Transition in Biocompatible Polyurethane Elastomers Based on Amphiphilic Soft Segments
58. Bożena Tylińczak, Sonia Kudłacik-Kramarczyk, Anna Drabczyk, Magdalena Głąb, Katarzyna Chorążka
Swelling ability and pharmacological properties of chitosan-based hydrogels modified with natural substances
59. Bożena Tylińczak, Sonia Kudłacik-Kramarczyk, Anna Drabczyk, Magdalena Głąb, Katarzyna Chorążka
The impact of the modification of chitosan based matrices on the mechanical properties of polymeric materials
60. Aleksander Prociak, Katarzyna Uram, Maria Kurańska, Sławomir Michałowski
New bio-based polyols for application in polyurethane systems
61. Joanna Wojturska, Renata Hyla
Chemical resistance of vegetable oil based polyurethane coating materials
62. Natalia Złocista-Szewczyk, Aleksandra Matusiak, Kinga Pielichowska
Polymer hydrogels based on modified sodium alginate for cartilage tissue regeneration
63. Natalia Złocista-Szewczyk, Bartosz Lizoń, Kinga Pielichowska
Modified Gellan gum as a potential material for orthopedic application
64. Vladimíra Krmelová, Mária Gavendová, Tomáš Zatroch, Jan Krmela, Andrej Dubec, Bibiana Bizubová
Structure and properties of polypropylene fibres with calcium carbonate
65. Alexander Schindler, Krzysztof Hodor
Identify – Innovative Proteus[®] Software