MONASH University

Master of Green Chemistry and Sustainable Technologies

Workshop Monash University and University of Padova

July, 20th and 21st 2022 9-13 CET
Aula F, Dipartimento di Scienze Chimiche

Day 1
20th July, 2022 – 9-13 CET

9-9.10
Welcome Address
Prof. Mara Thiene, Delegate Joint Degree and International Ranking
University of Padova
Prof. Antonino Polimeno, Deputy Director, Dipartimento di Scienze Chimiche

9.10-9.45
Brief overview of Universities & Faculty Structures at Monash and 9.15-10
9.10-9.30 Prof. Antonio Patti (Monash University)
9.30-9.45 Prof. Mara Thiene (University of Padova)

9.45-10.45
Research activities at Monash and UniPD in the field of green/circular and sustainable chemistry
4 short presentations (2 from Monash, 2 from UniPD, 15 minutes each)

Prof. Antonio Patti (Monash University): Biomass Valorisation Using Green Chemistry

Prof. Andrea Robinson (Monash University): Exploiting olefin metathesis for selective synthesis

Prof. Mauro Carraro (University of Padova) Sustainable catalysis with multimetallic complexes

Dr. Marco Baron (University of Padova): Organometallic catalysis for the valorization of carbon dioxide and renewable feedstocks

10.45-11.15
Coffee break & discussion

11.15-13
Overview of Masters Programs and possible contact points in the field of sustainable/green chemistry

- Overview of relevant Masters programs from Uni Padova and Monash Universities
  Prof. Antonio Patti (Green Chemistry in Manufacturing, Monash University) 20'
  Prof. Silvia Gross (Circular Economy, UniPD) 20'
  Prof. Camilla Ferrante (Chemistry, UniPD) 10'
  Prof. Fernando Formaggio (Industrial Chemistry, UniPD)
  Prof. Antonella Glisenti (Materials Sciences, UniPD), 10'

Day 2
21st July, 2022 – 9-13 CET

9-10
Possible Joint PhD Monash and University of Padova

- Relevance of joint PhD - Prof. Massimiliano Zattin, Vice Rector for Postgraduate and Doctorate Programmes, University of Padova
- Overview of research areas from respective departments (Uni Padova and Monash)
- How a Joint PhD would operate
- Models of operation that can be followed
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10-10.45
Technical round table (part 1)

- Discussion of options for collaboration with Mastersù
- Mobility windows (first option)
- Double Degree Masters – subject to fees issue being resolved
- Study Abroad exchanges for one semester
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10.45-11.15
Coffee break and discussion

11:15-13
Technical round table (part 2)

Timing
Which subjects (subject to offerings in particular semesters)
Level of support

- Shared teaching collaboration

Online
Block teaching (Use of Prato Centre)

Participants from Monash University

Prof. Antonio Patti (Monash University)
Prof. Andrea Robinson (Monash University)

Short bio:

Prof. Antonio Patti
Research interest:

Prof Patti's research interests are focused on green chemistry approaches for the utilisation of biomass feedstocks for extraction, processing and production of valuable chemicals for numerous applications. The recovery of valuable chemical components from by-products or "waste" has been a particular focus of biomass studied. Applications of green chemistry in agriculture are of particular interest and he has undertaken several projects involving soil chemistry, fertiliser development and understanding the role of natural organic matter in the soil.

Recent relevant publications

1. Ruth M. Barajas-Ledesma, Craig W. Stocker ,Vanessa N.L. Wong, Karen Little, Gil Garnier and Antonio F. Patti,
Biodegradation of a Nanocellulose Superabsorbent and Its Effect on the Growth of Spinach (*Spinacea oleracea*) *A**CS Agric. Sci. Technol.*** 2022, 2, 1, 90–99
2. Biplob K. Saha**,** Michael T. Rose**,** Lukas Van Zwieten**,** Vanessa N.L. Wong and Antonio F. Patti,
Slow Release Brown Coal-Urea Fertilizer Potentially Influences Greenhouse Gas Emissions, Nitrogen Use Efficiency, and Sweet Corn Yield in Oxisol, ***ACS Agric. Sci. Technol.*** 2021, 1, 5, 469–478
3. Ghosh, D., Tanner, J., Lavoie, J.M., Garnier, G. and Patti, A.F., 2021. An Integrated Approach for Hemicellulose Extraction from Forest Residue. *BioResources*, *16*(2).
4. Shivali Banerjee, Meghana Munagala, Yogendra Shastri, Ranganathan Vijayaraghavan, Antonio F. Patti, and Amit Arora, Process Design and Techno-Economic Feasibility Analysis of an Integrated Pineapple Processing Waste Biorefinery, ***ACS Eng. Au*** 2022, 2, 3, 208–218

Prof. Andrea Robinson
Professor Robinson's research interests combine homogeneous catalysis with peptidomimetics and renewable feedstocks. Olefin and alkyne metathesis has been used to uncover mechanism of action of disulfide-containing bioactive peptides (e.g. human insulin, oxytocin, conotoxins), generate monomers from vegetable feedstocks for polyamide/ester production and high-performing surface coatings, and synthetic materials (e.g. bioelastomers) inspired by designs found in Nature.

Publications in these areas include:
Bianca van Lierop, Shee Chee Ong, Alessia Belgi, Carlie Delaine, Sofianos Andrikopoulos, Naomi L. Haworth, John G. Menting, Michael C. Lawrence, Andrea J. Robinson & Briony E. Forbes 2017, ‘Insulin in motion: The A6-A11 disulfide bond allosterically modulates structural transitions required for insulin activity’, Scientific Reports, vol. 7, no. 1, 17239.

Bianca J. van Lierop, Samuel D. Robinson, Shiva N. Kompella, Alessia Belgi, Jeffrey R. McArthur, Andrew Hung, Christo- pher A. MacRaild, David J. Adams, Raymond S. Norton & Andrea J. Robinson 2013, ‘Dicarba α-Conotoxin Vc1.1 Analogues with Differential Selectivity for Nicotinic Acetylcholine and GABAB Receptors’, ACS Chemical Biology, vol. 8, no. 8, pp. 1815–1821.

Nicolas Daniel Spiccia, Szabolcs Solyom, Clint Peter Woodward, William Roy Jackson & Andrea Jane Robinson 2016, ‘Cross-Metathesis of Brønsted Acid Masked Alkenylamines with Acrylates for the Synthesis of Polyamide Monomers’, The Journal of Organic Chemistry, vol. 81, no. 5, pp. 1798–1805.

Zhen J. Wang, W. Roy Jackson & Andrea J. Robinson 2015, ‘A simple and practical preparation of an efficient water soluble olefin metathesis catalyst’, Green Chemistry, vol. 17, no. 6, pp. 3407–3414.

Jim Patel, Jomana Elaridi, W. Roy Jackson, Andrea J. Robinson, Algirdas K. Serelis & Chris Such 2005, ‘Cross- metathesis of unsaturated natural oils with 2-butene. High conversion and productive catalyst turnovers’, Chemical Communications, pp. 5546.