

# Past and Present Research Systems of Green Chemistry

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## Alternative ionic liquid-based lignocellulosic biomass pre-treatment and fractionation towards progress in biorefinery

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The undiscovered potential of lignocellulosic biomass to obtain a variety of value-added products requires broad research to ensure the feasibility of lignocellulosic biorefineries. One of the major limitations of the biorefinery concept is the lack of an efficient biomass processing tool, which could compromise investment in this sector. Therefore, studies on biomass pretreatment and fractionation were developed to efficiently overcome the recalcitrance of lignocellulose and reduce costs of biorefinery processes. The main objective of current social and global need is to develop a range of innovative alternatives to the valorization of lignocellulosic residues to chemicals, fuels and materials making use of environmentally sound protocols from pretreatment/fractionation to conversion to valuable end products. The ionic liquid, IL, technology on biomass processing is relatively recent and first studies were focused on the lignocellulosic biomass dissolution in different ILs. The dissolution in IL drives to the structural changes in the regenerated biomass by reduction of cellulose crystallinity and lignin content contrasting to the original biomass. These findings provided ILs as tools to perform biomass pre-treatment and the advantageous use of their specific properties over the conventional pre-treatment processes. This presentation focuses on the critical outlook on the study of biomass dissolution and changes occurred in the biomass during this process as well as on the influence of several crucial parameters that govern the dissolution and further pre-treatment process.

### Biography

Ewa Bogel Lukasik has completed her PhD from Warsaw University Technology, Poland. She was a Marie Curie Early Stage Researcher in QUILL, UK and Marie Curie Experience Researcher in iBET, Portugal. She is a Group Leader of Advanced fluids in tailor-made biofuel and bio-based product processing, New University of Lisbon. She is involved in COST Actions: Valorization of lignocellulosic biomass side streams for sustainable production of chemicals, materials and fuels using low environmental impact technologies FP1306, Emergence and Evolution of Complex Chemical Systems CM1304, Utilisation of Biomass for Sustainable Fuels & Chemicals CM0903. She has published 42 papers in reputed journals.

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