



DIPARTIMENTO DI CHIMICA «G. CIAMICIAN»

AVVISO DI SEMINARIO

Prof. **Stuart James**

Queen's University Belfast
School of Chemistry and Chemical Engineering

Title

MECHANOCHEMISTRY AND POROUS LIQUIDS

Thursday
26th October 2023

ore 9,30
Room 1B
(UE1 Navile)

Department Director

Prof. Marco Lucarini

For further information and if interested in agreeing a personal scientific meeting with the guest please contact:

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Abstract:

Mechanochemistry and Porous Liquids

Mechanochemistry: Mechanochemistry involves the use of mechanical force (grinding, shear, compression) to induce chemical reactions. It potentially provides a more sustainable way of doing synthesis than traditional methods since it avoids the use of solvents. However, mechanistically it remains poorly understood. Our work on mechanistic understanding, scale-up and commercialization through continuous twin-screw extrusion techniques and some recent Life Cycle Assessments will be presented.

Porous Liquids: Porosity is a fundamental property of materials which has until recently only been associated with the solid state. We conceptualized porous liquids as a counter-intuitive class of materials, in 2007 and they have now become a growing field of study worldwide. Since they combine fluidity with porosity they can therefore be developed for use in continuous gas separation processes. Our work towards applying them for biogas upgrading will be presented. The use of this concept to make liquids with unusually high compressibility will also be discussed.



Professor Stuart James

Stuart James is Professor of Inorganic Chemistry at Queen's University Belfast, having previously studied and worked in UK and European Universities including the Universities of Bristol, Cambridge, Imperial College, Louis Pasteur (Strasbourg) and Utrecht. He founded the field of Porous Liquids by conceptualising them in 2007 and he has also pioneered in the field of mechanochemistry, contributing both fundamental and industrially applied work to field.

Complimenting his fundamental research, he has engaged in commercialisation, in particular by co-founding two spin-out companies: MOF Technologies Ltd. and Porous Liquid Technologies Ltd. (PLT). PLT won the Energy category of the *Royal Society Emerging Technologies Competition* 2022.