

# **7° Workshop Nazionale GRUPPO INTERDIVISIONALE GREEN CHEMISTRY- CHIMICA SOSTENIBILE**

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## **BOOK OF ABSTRACTS**

# Sweet Ionic Liquid based Materials for Environmental Applications

F. Billeci,<sup>a</sup> H. Q. N. Gunaratne,<sup>b</sup> N. V. Plechkova,<sup>c</sup> K. R. Seddon,<sup>d</sup> F. D'Anna.<sup>a</sup>

<sup>a</sup>Università degli Studi di Palermo, Dipartimento di Scienze e Tecnologie Biologiche, Chimiche e Farmaceutiche, Viale delle Scienze, Ed. 17, 90128 Palermo, Italy

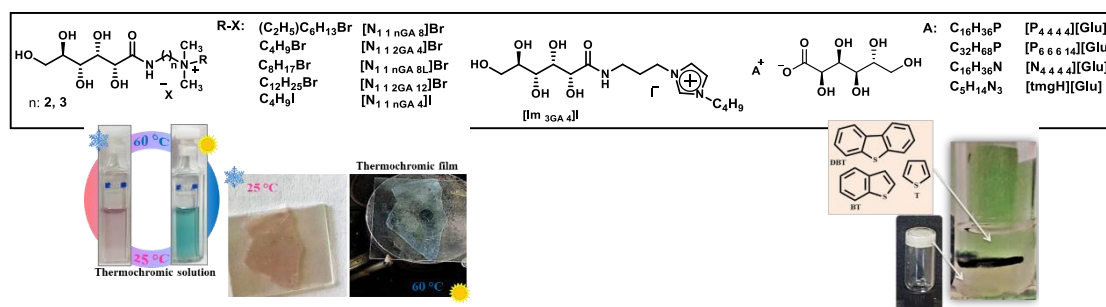
<sup>b</sup>School of Chemistry and Chemical Engineering, Queen's University of Belfast, Stranmillis Road, Belfast, UK

<sup>c</sup>School of Medicine, Dentistry and Biomedical Sciences, Queen's University of Belfast, Stranmillis Road, Belfast, UK

<sup>d</sup>The QUILL Research Centre, School of Chemistry and Chemical Engineering Queen's University of Belfast, Stranmillis Road, Belfast, UK

floriana.billeci@unipa.it

Ionic liquids (ILs) thanks to their well-known properties were employed in several fields. For a long time, ILs were considered the “green” alternative to conventional organic solvents. However, attention to environmental health led to consider alternative synthetic pathways, which use natural sources as starting materials. ILs drawn in Figure 1 were synthesised using gluconic acid, a natural organic acid. The structures carry gluconic moiety on the cation or as the anion. These eco-friendly ILs have been studied to obtain new materials for the desulfurisation of fuels and to perform new systems for energy storage devices. Gluconate ILs have been applied as a constituent of supramolecular gels able to adsorb aromatic sulfur compounds,<sup>1</sup> contained in fossil fuels. These damage both human and environmental health. The results highlighted the possibility to consider this process as an alternative to the currently common processes. Differently, ILs with gluconic moiety on the cation, like [N<sub>1</sub> 1 2GA 8]Br, have been employed to perform systems able to store energy from sunlight. In details, the interaction between these ILs and the salt Co(NTf<sub>2</sub>)<sub>2</sub> gave rise to thermochromic solutions able to switch the colour in the temperature range 25-60 °C, which is well suited to project new energy devices. These reversible systems have been incorporated in polymers, obtaining polymeric films with the same chemical properties of the solutions. These are retained for a long time from the preparation and after several charging cycles.<sup>2</sup>



**Figure 1** – IL structures synthesised and their applications.

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## References

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2. F. Billeci, H. Q. N. Gunaratne, F. D'Anna, G. G. Morgan, K. R. Seddon and N. V. Plechkova, *Green Chem.* **2019**, *21*, 1412-1416.