Ionic liquids – where should we look next for applications and inspiration?

John D. Holbrey

The QUILL Research Centre, School of Chemistry and Chemical Engineering, Queen's University Belfast, Belfast, Northern Ireland, UK. Email: j.holbrey@qub.ac.uk

---

The seismic shift in focus from esoteric, speciality materials into mainstream generic non-aqueous media, as discussed in undergraduate text books such as "*Inorganic Chemistry*" by Housecroft and Sharpe [1], characterises the change in ionic liquids science and engineering that has occurred over the last 25 years. Applications including catalysis, gas scrubbing, lignocellulosic biomass processing, the production of dye sensitised solar cells and other electrochemical devices across a range of industries in the energy, electronic and chemical sectors have been established.

However, over all this time, the definition of the term '*ionic liquid*' has been hottly debated, initially within the context of artificial differentiation from molten salts, and then within the discussion of whether an ionic/molecular liquid hybrid, such as deep eutectic solvents could be considered as ionic liquid materials. Fortunately, today we are largely in agreement that '*form follows function*' and the practical application of materials to address problems and provide solutions is of greater importance than semantics thus allowing us to legitimately work with materials that are '*ionic liquid-like*' and undertake research that is '*ionic liquid-inspired*'.

This presentation will discuss aspects of the use of ionic liquids, and ionic liquid-like materials in green chemical and engineering processes, including the design, synthesis and structural characterisation of materials. This will draw of past research sucesses, and will highlight where strategies to address local and global sustainability challenges are inspiring new research and new ionic liquid development.

REFERENCES

[1] C. E. Housecroft and A. F. Sharpe, *Inorganic Chemistry*, 5th ed, Pearson (Harlow, UK) 2018, 299-306.