MECHANOCHEMISTRY: FROM FUNDAMENTAL QUESTIONS TO COMMERCIALISATION

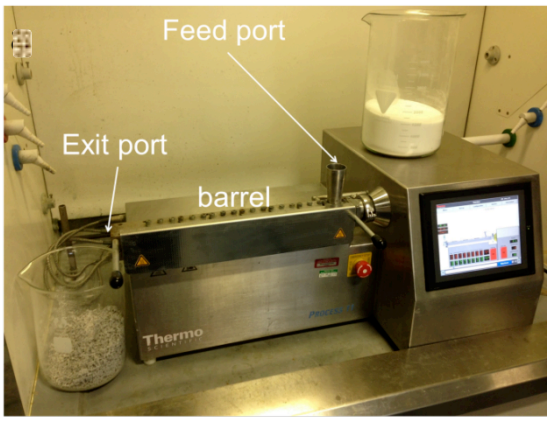
Stuart JAMES

School of Chemistry and Chemical Engineering, Queen's University Belfast, David Kier Building, Stranmillis Road, BT9 5AG, UK.

s.james@qub.ac.uk

This presentation will centre on the following questions:

1. How do mechanochemical reactions progress at the microscopic and molecular levels?[1]
2. How can mechanochemical synthesis be scaled up to industrial levels?[2]
3. What chemistry can only be done mechanochemically?[3]



References:

[1] Better understanding of mechanochemical reactions: Raman monitoring reveals surprisingly simple 'pseudo-fluid' model for a ball milling reaction, X. Ma, W. Yuan, S.E.J. Bell and S.L. James, *Chem. Commun*. 2014, **50**, 1585.

[2] Synthesis by extrusion: Continuous large scale synthesis of MOFs using little or no solvent, D. Crawford, J. Casaban, R. Haydon, N. Giri, T. McNally and S.L. James, *Chem. Sci.* 2015,**6**, 1645-1649.

[3] Low-Temperature Selective Catalytic Reduction (SCR) of NO_x with n-Octane Using Solvent-Free Mechanochemically Prepared Ag/Al_2O_3 Catalysts, U. Kamolphop, S.F.R. Taylor, J.P. Breen, R. Burch, J.J. Delgado, S. Chansai, C. Hardacre, S. Hengrasmee and S.L. James, *ACS Catal.* 2011, **1**, 1257.