



# *RCMS · IGER Seminar*



## **“New Monomers in Ring-opening and Radical Polymerisations for Sustainable and Functional Polymers”**



**Prof. Michael P. Shaver**

**( University of Edinburgh )**

**( Visiting Prof. of RCMS in 2017 )**

**Date : Fri. 8<sup>th</sup> Dec. 10:30 – 12:00**

**Place: Chemistry Gallery in Noyori Mat. Sci. Lab.**

In light of the environmental and economic challenges facing petroleum-derived plastics, new polymers can address one of two significant challenges. The first is sustainability, seeking to develop materials that are built from renewable resource or degrade in our environment. To make a difference, these materials need to offer a competitive economic advantage in either synthesis or end-of-life use on top of an environmental step change. The second is functionality, developing materials that are unique in their ability to perform a specific function, adding significant value to their performance and allowing us to continue to push the boundaries of how we shape our world. This talk will cover a series of vignettes from the Green Materials Laboratory at the University of Edinburgh, capturing some of our work in each of these areas. More specifically, the talk will feature our work on sustainable polyesters, including the development of new “closed loop” polymers which can be both polymerised and depolymerised using a designer aluminium catalyst and new routes to degradable polystyrene-mimics. Understanding of reaction mechanism and catalyst design has helped shape our progress and guide our current work. We will also discuss our more applied work, first on the development of responsive polymer nanocomposites that can act as inexpensive miRNA sensors and our preparation of the first polymeric versions of frustrated Lewis pairs which serve as self-healing and responsive materials.

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