Dr. Barralet’s work is centered around the exploitation of inorganic materials for tissue repair. While often this involves the development of synthetic bone graft substitutes the use of particles especially lends itself to controlled release in many other tissues such as the lung. Many implants develop inorganic coatings after implantation which may or may not be desirable, an example of research where this effect is exploited is in the formation of protective coatings on degradable metallic implants. The body’s ability to prevent spontaneous precipitation is also of interest since failure of this mechanism can have fatal consequences. Mineralizing organisms are thought to have been evolving for some hundreds of millions years to precisely control both inorganic compound formation and inhibition in aqueous conditions. While the exact mechanisms continue to elude us, there is growing evidence that control of the amorphous state is critical to these processes. Amorphous minerals are particularly interesting because they do not yield to diffraction techniques and are often highly unstable outside of their native environment. Work on protein guided mineralization as well as spontaneous self assembly will be presented.

Biography:
Dr Barralet is a Materials Science graduate who specialized in Biomaterials during his PhD at the Interdisciplinary Research Centre in Biomedical Materials, QMW, University of London. After a postdoctoral position with Professor Aoki at Tokyo Medical and Dental University he worked at Smith and Nephew Group Research Centre, York, UK developing bone graft and casting materials. At the University of Birmingham UK he progressed research themes in tissue engineering and bone grafts in collaboration with biologist and clinical co-workers.

He specializes in Bioceramics in particular low temperature syntheses of nanocrystalline and amorphous inorganics, cold setting materials (cements) and precipitation to create new or improved materials or devices for tissue repair or delivery. Work on tissue engineering has focused on new ways to build 3D structures using microscaffolds as building blocks for macroscale constructs. In addition calcium cross linked alginate has been evaluated as a tissue engineering scaffold. He has been awarded a Canada Research Chair in Osteoinductive Biomaterials and works on this topic as well as extending prior work to include biomineralization.

**DATE • TIME • LOCATION:**
Tuesday, September 16, 4:00 pm • Ag Eng Bldg 105 • Refreshments