



UNIVERSITÉ BLAISE PASCAL  
U.F.R de Recherche Scientifique et Technique



## **CYCLE DE CONFÉRENCES DE CHIMIE**

*Avec le concours de : Manufacture Française des Pneumatiques Michelin  
Centre de Développement Préclinique, Schering-Plough  
Fédération de Chimie (FR2404)  
Section Auvergne de la Société Française de Chimie  
U.F.R.S.T. / Master de Chimie / Département de Chimie*

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**Jeudi 20 Octobre 2011 à 16h (Hors cycle)**

*Salle C, Bâtiments de Chimie - (Site des Cézeaux)*

**Pr. GERAINT WILLIAMS**

*Materials Research Centre, Swansea University, UK*

### **Rust never sleeps: The visualisation of localised corrosion using advanced electrochemical scanning techniques**

For many decades electrochemical methods have been used extensively to study localised corrosion affecting metal surfaces. However, some localised corrosion phenomena are either difficult or impossible to study using conventional potentiostat-based instrumentation. The advent of new advanced electrochemical methods such as scanning vibrating electrode (SVET) and scanning Kelvin probe (SKP) techniques has made quantitative measurements on such corrosion phenomena possible. In-situ SKP techniques allow corrosion potentials to be measured beneath intact paint films and can be used to follow localised corrosion kinetics of organic coated metals, while SVET is able to map time-resolved, local current density distributions above a corroding metal surface held in aqueous solution. This talk will show how the use of these techniques in studies of magnesium, iron and aluminium alloy corrosion, both in the presence and absence of protective organic coatings, has given new mechanistic insight. In addition, new applications of such techniques in areas such as forensic science will also be demonstrated.

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