



## **CYCLE DE CONFÉRENCES DE CHIMIE**

*Avec le concours de : Manufacture Française des Pneumatiques MICHELIN  
Ecole Nationale Supérieure de Chimie de Clermont-Ferrand  
Institut de Chimie de Clermont-Ferrand (ICCF UMR 6296)  
U.F.R.S.T. / Master de Chimie / Département de Chimie*

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**Jeudi 9 Février 2012 à 10 h**

**Amphi de Chimie Paul REMI - (Site des Cézeaux)**

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Development, Energy & Resources (Netherlands)*

# **COMPARING PETROCHEMICAL AND BIO- BASED POLYMERS IN TERMS OF THEIR ENVIRONMENTAL PERFORMANCE**

Approximately one third of the total global primary energy supply is used by industry. More than 60% of this energy use is required for making materials, i.e. chemicals and petrochemicals, iron and steel, nonmetallic minerals, and nonferrous metals. The production of these materials is hence responsible for approximately 20% of global primary energy use and further energy is required for processing these materials to final products. Energy use is a major reason for the environmental impacts caused by industry next to impacts related to process emissions and resource extraction. It is therefore of great importance to ensure that new materials reduce the burden on the environment. Energy analysis and environmental life cycle assessment (LCA) are tools which allow to measure the environmental impacts of current processes; they also allow to estimate the impacts of novel and emerging technologies and materials, provided that key data are available. This lecture will present results for selected environmental indicators related to the production and use of novel bio-based polymers and polymer nanocomposites. Weaknesses and problems related to the methodologies will also be discussed. The lecture provides a first understanding whether emerging bulk materials have a potential to reduce our environmental footprint.