Séminaire PIMM

Jeudi 10 mai 2012 à 14 heures

Amphi A

Arts et Métiers ParisTech, 151 bd de l'hopital, 75013 Paris

14h00

Yannick Merckel

Doctorant LML-PIMM

CONSTITUTIVE MODELING OF THE ANISOTROPIC BEHAVIOR OF MULLINS SOFTENED FILLED RUBBERS

Original constitutive modeling is proposed for filled rubber materials in order to capture the anisotropic softened behavior induced by general non-proportional pre-loading histories. The hyperelastic framework is grounded on a thorough analysis of cyclic experimental data. The strain energy density is based on a directional approach. The model leans on the strain amplification factor concept applied over material directions according to the Mullins softening evolution. In order to provide a model easily versatile that applies for a wide range of materials, the proposed framework does not require to postulate the mathematical forms of the elementary directional strain energy density and of the Mullins softening evolution rule, and a computational procedure is defined to build both functions incrementally from experimental data obtained during cyclic uniaxial tensile tests. Successful comparisons between the model and the experiments demonstrate the model abilities. Finally, the model is shown to accurately predict the non-proportional uniaxial stress-stretch responses for uniaxially and biaxially pre-stretched samples.

14h40

Sylvie Castagnet

Chercheure CNRS, Institut Pprime, ENSMA Poitiers

INFLUENCE DE LA DIFFUSION D'HYDROGENE SUR LE COMPORTEMENT ET L'ENDOMMAGEMENT DES POLYMERES

Voir fichier attaché

15h40

Café et petits gâteaux