CLBA2012
8 e 9 de novembro
Rio de Janeiro, Brasil
Associação Brasileira de Adesão e Adesivos - ABAA
Associação Portuguesa de Adesão e Adesivos - APAA
http://clba.cefet-rj.br

Development of multifunctional coatings and adhesives: experiments and computational modeling

W. L. Cavalcanti, P. Schiffels, K. Rischka, M. Noeske

Fraunhofer Institute for Manufacturing Technology and Advanced Materials

IFAM, Bremen, D-28359, Germany.

At Fraunhofer IFAM computer simulations and different experimental techniques have been successfully applied to develop coatings and adhesives with improved functionalities. The speaker will present an overview of research activities carried out at IFAM within the framework of different projects on the development of multifunctional composites. The presentation will cover the development of anti-icing coatings, presenting the ice testing facilities at IFAM, concepts, and technical approaches applied, the computational modeling applied to investigate morphology and the influence of surfaces on ice adhesion. Furthermore, the work in developing coating and adhesives with additional functionalities will be presented, like anti-fouling and antibacterial functionalities, anti-corrosion performance, the different technical approaches applied, as the biomimetic approach to develop adhesives. Additionally, the use of computational nanotechnology to support the experiments will be highlighted as an effective way to understand and determine properties and behavior for a broad range of materials and diverse applications, going to different time and length scales. The capabilities of computational modeling to determine interactions among the coating matrix and the particles, as well as the interaction on surfaces will be presented.