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LMGP – Seminar

X-CHROMIC MATERIALS AND DEVICES

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Abstract

Materials with tunable optical properties because of external means such as illumination, temperature, pressure, electric and magnetic fields, gases, or electrochemical potential have large potential. In particular, some of the main drivers of the research activity in this field are the reduction of energy consumption by smart controlling of light and heat transfer through windows, the demand of opto-electronic and medical industry for emitting and sensing devices, as well as environmental technology to increase functionality of chromogenic devices. Among chromic materials, transition metal oxides are of particular interest thanks to diverse properties in relation with the multivalent nature of the cations. Through various examples including the most typical electrochromic oxide, WO_3, as well as NiO and V_xO_y, the influence of the film, structure, composition, morphology on their chromic properties will be discussed. Finally, the integration of single layers in complete devices will be highlighted pointing out the need of novel architectures.

Dr. Aline Rougier received her PhD in the field of solid state chemistry and materials science from the University of Bordeaux, France, in July 1995. After two post-doctorates dedicated to lithium batteries application, her work as CNRS researcher, has been mostly dedicated to the synthesis and characterization of materials in the field of energy, for lithium batteries, Solid Oxide Fuel Cells, and Electrochromism. Her main topic concerns more specifically the study and optimization of electrochromic materials as powders or thin films, from deep investigation of their optical and electrochemical properties to their integration in devices for applications in the visible and the infrared regions.

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