

The purpose of the Young Scientist Meeting Program is to show CENIM research activities from the perspective and the work of our young researchers. In this edition, we have the participation of two young researchers that have enrolled CENIM as International Internship Visitors and a member of our Steel Research Group. They will show their ongoing work on metallic alloys, from the design, production and transformation to the analysis of their final use in different industrial sectors.

**12.00h : 12.30h**

### **Solidification, microstructure and wear and corrosion resistance of as-cast binary alloys**

**Emmanuelle Sa Freitas**

*Faculdade de Engenharia Mecânica (FEM), Universidade Estadual de Campinas (UNICAMP), Campinas SP Brasil*

A short introduction on the research interests and activities of the Solidification Group at the University of Campinas will be given. Some recent results focusing on the correlation of different interphase spacings, cellular and dendritic microstructures with wear and corrosion resistances of Pb-Sb and monotectic alloys will be presented. The effects of the scale of different interphase, cellular and dendritic spacings and of solute redistribution will be examined.

**12.30h : 13.00h**

### **Bulk nanostructured metals/composites by accumulative press bonding process**

**Sajjad Amirkhanlou**

*Department of Mining and Metallurgical Engineering, Amirkabir University of Technology, Tehran, Iran*

Accumulative press bonding (APB) is a novel severe plastic deformation process used to fabricate nano/ultrafine grained metals and composites. The APB process is based on the principles of accumulative roll bonding (ARB) process, which is applied to sheet materials. However, the APB process can also be applied to thick billet of relatively large-scale dimensions. In addition, APB process has the capability of producing metal matrix composites (MMCs). In the present investigation, challenges and advantages of APB process are discussed.

**13:00h : 13.30h**

### **Ductility and TRIP Effect in Nanostructured Bainite**

**L. Morales-Rivas**

*CENIM (CSIC). MATERIALIA Research Group, Madrid, Spain*

Much work has been devoted to characterize the microstructure and mechanical properties of bainitic nanostructured steels. Tensile properties can exhibit unrivalled combinations of strength and ductility, UTS >2 GPa and total elongation > 13%. The present work explores the deformation mechanisms that take place during plastic deformation and studies with special emphasis the role that TRIP effect plays in enhancing the ductility of this novel structure.

**Young Scientist Meeting**

May 28th, 2014. 12.00h Conference Room – CENIM

Avda. Gregorio del Amo, 8. 28040 Madrid