

## Symposium E: Surface Engineering: protective coatings and modified surfaces

### Scope of the symposium

The aim of this symposium is to offer an overview on the frontiers of research, technology and applications of protective coatings and surface modifications by plasma, electron, ion or laser beams. Physicists, chemists, materials scientists, mechanical, material, metallurgical and mining engineers working in the field are the target audience. Areas of particular interest will include, but will not be limited to

- Nanostructured coatings, such as diamond-like carbon films, nanodiamond films, multi-component systems based on transition metal nitrides or oxides, hard nanocomposites and multi-functional nanolaminates, with a wide range of applications (automotive and machinery industries, aeronautic and aerospace industries, mining industry, oil and gas industry, medical implants, decoration, electronic industry, etc.);
- Surface modifications induced by energetic techniques such as ion implantation, laser treatment, plasma processing, etc.;
- Physical and chemical routes of synthesis with emphasis on emerging techniques: hybrid sputtering/CVD techniques, highly ionized sputter deposition, ion enhanced pulsed laser deposition, plasma-assisted chemical vapor deposition, atmospheric plasma, pulsed plasma, plasma-based ion implantation, activated reactive evaporation, cathodic arc, etc;
- Fundamentals of deposition processes, growth modeling, substrate/surface effects, residual stresses; tribology.
- Characterization and properties of protective coatings and modified surfaces, including morphology, microstructure, composition, mechanical and tribological properties, tribochemistry, MEMS/NEMS interfaces and chemical properties comprising chemical inertness, anti-microbial or self-cleaning functionalities.

Abstracts will be solicited in (but not limited to) the following topics:

- ultra-low friction coatings
- recent progress in nanoindentation
- tribology
- super hard coatings
- hydrophobic and hydrophilic coatings
- nanostructured coatings
- surface metrology

- new deposition techniques
- coatings for oil and gas industry
- coatings for automotive and machinery industry
- coatings for aeronautic and aerospace industries

### Symposium organizers

*Fernando Lázaro Freire Junior* (PUC-Rio, Rio de Janeiro, RJ, Brazil)

*Israel Jacob Rabin Baumvol* (UCS, Caxias do Sul, RS, Brazil)

### Invited speakers (tentative list)

*Thomas Hirsch* (Stiftung Institut Werkstofftechnik, IWT Bremen, Germany)

*Yip-Wah Chung* (Northwestern University, USA)

*Fernando Alvarez* (UNICAMP, Brazil)

*Amilton Sinatora* (USP, Brazil)

### Scientific committee members (tentative list)

Clodomiro Alves (UFRN, Natal, Brazil)

Francisco Marques (UNICAMP, Campinas, Brazil)

Carlos Figueroa (UCS, Caxias do Sul, Brazil)

Pedro Grande (UFRGS, Porto Alegre, Brazil)

Ronghua Wei (Southwest Research Institute, San Antonio, Texas, USA)

Sérgio de Souza Camargo (UFRJ, Rio de Janeiro, Brazil)

Thierry Belmonte (Institut Jean Lamour, Nancy, France)

Vladimir Jesus Trava-Airoldi (INPE, SP, Brazil)