

Symposium Q : Advances in steel metallurgy and applications

Scope of the Symposium

This symposium is dedicated to contributions regarding recent developments on steels ranging from fundamental aspects of physical metallurgy, enhancements in properties, and innovations in applications. Research areas related to novel alloy compositions and microstructures (TRIP, TWIP, high-entropy, low density, multiphase steels, etc.), phase transformations (TRIP / TWIP effects, bainitic, martensitic) in steels, improvements in mechanical and functional properties, enhancements in degradation behavior of steels (corrosion, wear and oxidation resistance), heat treatments (intercritical, Q&P, cryogenic, and thermochemical treatments), thermomechanical treatments, surface modifications, innovative applications in defense, automotive, biomedical, and other relevant industrial sector are welcome. Investigations by means of both theoretical and experimental approaches are encouraged. The main goal of this symposium is bringing together Brazilian and foreign experts in several aspects of steel research opening possibilities of valuable discussions of new concepts, trends and technologies related to developments and technological applications of steels. This symposium is also a valuable opportunity to strengthen on-going collaborations, prospect new ones and build-up research networks.

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

- *TRIP and TWIP effects in steels;*
- *Innovations in heat treatments of steels (Q&P, Intercritical, cryogenic treatments, and so on);*
- *Degradation of steels (corrosion, wear, tribo-corrosion, hydrogen embrittlement, high-temperature oxidation, decarburizing, etc.);*
- *Surface treatments and coatings*
- *High-entropy steels;*
- *Multiphase steels;*
- *Advanced high-strength steels;*
- *Computational investigations in steels (DFT, Monte Carlo, molecular dynamics, phase field, and finite elements);*
- *Advanced characterization tools in steel research (Characterization in synchrotron sources, neutron diffraction and scattering, high-resolution transmission electron microscopy, scanning-transmission electron microscopy, atom probe tomography, EBSD, EELS,*
- *Thermomechanical treatments and processing.*

Tentative list of invited speakers (To be confirmed)

Alexandre Bellegard Farina (*Villares Metals*) **Oscar Balancim** (*Departamento de Engenharia de Materiais, Universidade Federal de So Carlos*) **Anibal de Andrade Mendes Filho** (*CECS, Universidade Federal do ABC*) **Jilt Sietsma** (*Departmento of Materials Science and Engineering, Delft University of Technology*) .

Symposium Organizers

Hamilton Ferreira Gomes de Abreu (*Universidade Federal do Cear*) **Helio Goldenstein** (*Escola Politecnica, Universidade de So Paulo*) **Mrcio Gustavo Di Vernieri Cuppari** (*CECS, Universidade Federal do ABC*) **Roberto Gomes de Aguiar Veiga** (*CECS, Universidade Federal do ABC*) **Sydney Ferreira Santos** (*CECS, Universidade Federal do ABC*) .