



Phase Transformations and Structure/Property Relationship in Duplex Austenitic-Ferritic Stainless Steels

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Message from the Guest Editor

It is well known that thermal aging and/or thermomechanical treatments of austenitic–ferritic (γ/δ) duplex steels lead to more than a dozen secondary phases (carbides, nitrides, Frank–Kasper phases (σ , χ , R), π , τ and Laves phases) essentially taking place inside the δ -ferrite grains and/or at the δ/γ interfaces. The latter phases, play an important role in the control of the microstructure and, consequently, in-service properties (mechanical, corrosion, etc.) of these materials.

Topics addressed in this Special Issue may include but are not limited to:

Microstructure: Thermal aging, thermodynamic and kinetic calculation;

Precipitation: Carbides, Nitrides, Secondary phases (σ , χ , R, π , τ , Laves phases);

Mechanical properties: plasticity, constitutive law, fatigue, etc.;

Characterization Techniques: EBSD, SKPFM, TEM, atom probe tomography, mechanical and crystallographic phase mapping, etc.;

Corrosion: Stress corrosion, pitting corrosion, etc.;

Surface treatments: Nitriding, plasma immersion ion implantation, etc.;

Powder metallurgy: SPS (spark plasma sintering), cold spray, etc.





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Message from the Editorial Board

Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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