

Special Issue

Joining of Advanced High Strength Steels for the Automotive Industry

Message from the Guest Editor

Advanced High Strength Steels (AHSSs) are increasingly used for the fabrication of more lightweight, mechanical and impact resistant components. However, even though fusion and solid-state technologies offer a notable flexibility in designing tailored multi-material parts for specific purposes, joining of AHSSs usually needs a different approach than traditional steels. In this regard, fusion weldments of AHSSs normally exhibit a much lower mechanical strength and toughness as compared to the base materials. In addition, crack formation, shrinkage porosity, corrosion phenomena are more critical in AHSSs. To limit or overcome these issues, different promising solutions have been proposed. However, they are often unreliable enough to allow an effective integration on a broad scale and some issues still remain unsolved. This special issue aims at collecting the most recent developments in joining covering several aspects such as fusion welding, solid-state and mechanical joining, microstructure-property relationships of joints, welding and forming of tailor welded blanks, welding control and automation, joining modeling and FEM simulation, welding metallurgy.

Guest Editor

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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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