Special Issue

Fundamentals and Applications of Laser Welding

Message from the Guest Editor

Studies of laser welding fundamentals are of great significance to improve the laser welding technology and expand the applications of laser welding. The topics cover the interaction of laser heat source and different kinds of material, the absorption and scattering mechanism of laser beams by laser-induced plasma/metal vapor, intelligent control of laser heat source, laser–arc hybrid welding, molten pool and keyhole behavior during laser welding, mechanism and online/offline detection of welding defects, modeling and numerical simulation of laser welding, etc. This Special Issue welcomes papers on the following topics: Reviews and investigations on laser welding fundamentals and applications. Studies on laser welding monitoring, defects detection, microstructure analysis, or laser hybrid welding. Simulations on laser welding molten pool, plasma/vapor, keyhole dynamics. Studies on the absorption and scattering mechanism of laser beam by laser-induced plasma/metal vapor Studies on fusing of multi-sensor data, intelligent methods with machine learning related to laser welding Studies on non-destructive inspection methods of laser welding or laser hybrid welding defects.

Guest Editor

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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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