Special Issue

Research and Development of Welding Processes, Methods, Mechanisms, and Technologies

Message from the Guest Editor

Welding plays a key role in global economic development, with a market size valued of USD 23.75 billion in 2022. It is fundamental in the construction and reparation of devices, structures, machinery, and vehicles. Welding processes have promoted the development of technologies such as lasers and robotics. Recent trends in welding have led to important advances in understanding the mechanisms involved during the welding of similar and dissimilar materials. As new materials are developed, such as composites, cermet, nanostructures, and high-strength materials, welding poses a challenge for the current technologies. The importance of welding influences all industrial sectors from mechanics to oil and gas, energy production, mobility, and electronic components, all the way to aerospace sectors. This Special Issue aims to highlight the actual trends and developments in welding processes, especially novel methods and technologies, such as machine learning and AI, used to produce sound weldments in advanced materials, including the relevant phenomena and mechanisms involved, as well as important issues such as residual stresses, corrosion, and mechanical properties.

Guest Editor

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Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal *Applied Sciences* has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

Editor-in-Chief

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