1. Record Nr. UNINA9910367569903321

Autore	de Saracibar Carlos Agelet
Titolo	Friction Stir Welding and Processing in Alloy Manufacturing / Carlos Agelet de Saracibar
Pubbl/distr/stampa	MDPI - Multidisciplinary Digital Publishing Institute, 2019 Basel, Switzerland : , : MDPI, , 2019
ISBN	9783039212088 3039212087
Descrizione fisica	1 electronic resource (142 p.)
Soggetti	Chemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	Friction stir welding (FSW) is considered to be the most significant development in metal joining in decades and, in addition, is a "green" technology due to its energy efficiency, environmental friendliness, and versatility. This process offers a number of advantages over conventional joining processes. Furthermore, because welding occurs via the deformation of material at temperatures below the melting temperature, many problems commonly associated with joining of dissimilar alloys can be avoided, and thus, high-quality welds are produced. Due to this fact, FSW has been widely used in different industrial applications where metallurgical characteristics should be retained, such as in the aeronautic, naval, and automotive industries. The computational modeling of FSW processes is an extremely challenging task due to the highly nonlinear and coupled nature of the physical problem and the numerical issues that need to be properly addressed. This is why the numerical simulation of FSW processes has been a very active research field in the last few decades. Despite the complexity of the physical problem and its numerical simulation, significant advances in the field have been achieved as a result of interdisciplinary research on related fields of computational mechanics, constitutive modeling, materials characterization, mathematical

analysis, and numerical methods. This book collects some of the last developments in the fields of FSW, friction stir spot welding, and friction stir processing, written by well-known researchers who have contributed significantly to advances in the computational modeling, numerical simulation, and material characterization of those processes.