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Bonded Joints of 316L Stainless Steel and the 4J29 Kovar Alloy Using Nickel as an Interlayer Reprinted from: *Metals* 2016, 6, 263, doi: 10.3390/met6110263 . 57 -- Kapil Gangwar, M. Ramulu, Andrew Cantrell and Daniel G. Sanders Microstructure and Mechanical Properties of Friction Stir Welded Dissimilar Titanium Alloys: TIMET-54M and ATI-425 Reprinted from: *Metals* 2016, 6, 252, doi:10.3390/met6100252 . 69 -- Yufeng Sun, Nobuhiro Tsuji and Hidetoshi Fujii Microstructure and Mechanical Properties of Dissimilar Friction Stir Welding between Ultrafine Grained 1050 and 6061-T6 Aluminum Alloys Reprinted from: *Metals* 2016, 6, 249, doi:10.3390/met6100249 . 83 -- Celalettin Yuce, Mumin Tutar, Fatih Karpat and Nurettin Yavuz The Optimization of Process Parameters and Microstructural Characterization of Fiber Laser Welded Dissimilar HSLA and MART Steel Joints Reprinted from: *Metals* 2016, 6, 245, doi:10.3390/met6100245 . 95 -- Hui-Jun Yi, Yong-Jun Lee and Kwang-O Lee TIG Dressing Effects on Weld Pores and Pore Cracking of Titanium Weldments Reprinted from: *Metals* 2016, 6, 243, doi:10.3390/met6100243 . 112 -- Hafiz Waqar Ahmad, Jeong Ho Hwang, Ju Hwa Lee and Dong Ho Bae An Assessment of the Mechanical Properties and Microstructural Analysis of Dissimilar Material Welded Joint between Alloy 617 and 12Cr Steel Reprinted from: *Metals* 2016, 6, 242, doi:10.3390/met6100242 . 124 -- Dongsheng Chai, Dongdong Wu, Guangyi Ma, Siyu Zhou, Zhuji Jin and Dongjiang Wu The Effects of Pulse Parameters on Weld Geometry and Microstructure of a Pulsed Laser Welding Ni-Base Alloy Thin Sheet with Filler Wire Reprinted from: *Metals* 2016, 6, 237, doi:10.3390/met6100237 . 135 -- Baohua Chang, Dong Du, Chenhui Yi, Bin Xing and Yihong Li Influences of Laser Spot Welding on Magnetic Property of a Sintered NdFeB Magnet Reprinted from: *Metals* 2016, 6, 202, doi: 10.3390/met6090202 . 149 -- Rocku Oh, Duck Young Kim and Darek Ceglarek The Effects of Laser Welding Direction on Joint Quality for Non-Uniform Part-to-Part Gaps Reprinted from: *Metals* 2016, 6, 184, doi:10.3390/met6080184 . 158 -- Minjung Kang, Youngnam Ahn and Cheolhee Kim Gas Metal Arc Welding Using Novel CaO-Added Mg Alloy Filler Wire Reprinted from: *Metals* 2016, 6, 155, doi:10.3390/met6070155 . 173 -- Yunxia Chen, Xulei Wu, Xiaojing Wang and Hai Huang Effects of Reflow Time on the Interfacial Microstructure and Shear Behavior of the SAC/FeNi-Cu Joint Reprinted from: *Metals* 2016, 6, 109, doi:10.3390/met6050109 . 181 -- Yingping Ji, Sujun Wu and Dalong Zhao Microstructure and Mechanical Properties of Friction Welding Joints with Dissimilar Titanium Alloys Reprinted from: *Metals* 2016, 6, 108, doi:10.3390/met6050108 . 188 -- Rando Tungga Dewa, Seon Jin Kim, Woo Gon Kim and Eung Seon Kim Low Cycle Fatigue Behaviors of Alloy 617 (INCONEL 617) Weldments for High Temperature Applications Reprinted from: *Metals* 2016, 6, 100, doi:10.3390/met6050100 . 199.

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## Sommario/riassunto

Welding technology has been taken for granted as a mature and established technology for too long. However, many new welding technologies have been included among the alternatives to joining materials. They come both from the areas of fusion and solid-state welding. Moreover, a recent approach has offered one more alternative. This is hybrid welding, which couples two or more welding sources in a cooperative or synergic welding mode. Welding engineers and scientists have the task to understand which is the best technology for a specific application. This task requires deep knowledge and great intelligence to tackle the challenge of producing light and smart structures and products. In this book, a glimpse of recent developments in metal alloy welding is presented. Laser, friction, and arc welding are the main protagonists of the papers that are included. Processes,

materials, and tools are described and studied along with investigation procedures and numerical simulations. This book will make you aware of most of the subjects discussed in the scientific community and new potentialities of welding as a leading technology in manufacturing. I hope you enjoy reading this Special Issue, "Advances in Welding Metal Alloys, Dissimilar Metals and Additively Manufactured Parts".

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