

# **Journal of Smart Processing**

*Vol. 15 No. 3* 2026 (May 2026)

## CONTENTS

Latest Trends in Elucidating Phenomena Related to Welding  
and Additive Manufacturing Processes Using Arc Plasma

**S.P.S. Announcement** ..... N9

Preface of Feature Article

Latest Trends in Elucidating Phenomena Related to Welding  
and Additive Manufacturing Processes Using Arc Plasma

Hisaya KOMEN.....91

### **Feature Articles**

#### **Review Articles**

Omnidirectionality in TIG Welding-Based Additive Manufacturing:  
Research Trends and Validation with a Rotary TIG Torch

Masahiro KAWABATA.....92

Study on Arc and Molten Pool Flow Control Using External Magnetic Field

Shoichi MATSUDA and Yasushi TANAHARA.....100

A Study on Elucidating the Droplet Transfer Phenomena in Gas Metal Arc Welding

Yosuke OGINO.....109

Particle Simulation of Molten Metal Flow in Welding and Additive Manufacturing Processes  
Using Arc Plasma

Hisaya KOMEN.....114

#### **Regular Research Articles**

Influence of Intensive Metal Vapor on Arc Plasma in TIG Welding

Kazuma HIGASHIGUCHI, Hisaya KOMEN, Manabu TANAKA,

Tadasuke MURATA and Akihisa MURATA.....120

### **General Articles**

#### **Regular Research Articles**

Effects of External Magnetic Field on Metal Transfer Characteristics of  
CO<sub>2</sub> Metal-Cored Arc Welding

Kieu Anh Duong NGUYEN, Dang Khoi LE, Quang Ngoc TRINH,

Shinichi TASHIRO, Kenta YAMANAKA, Van Hanh BUI,

Manabu TANAKA and Lei XIAO.....127

Water Vapor-Mediated Thermal Decomposition of FeCO<sub>3</sub> to Macroporous Fe<sub>3</sub>O<sub>4</sub> Microspheres:  
Cooling-Stage Redox Control for Phase Purity

Rito FUJIWARA, Takahiro KOZAWA, Satoshi OTA,

Masakazu KAWASHITA and Hiroya ABE.....133

**S.P.S. News** ..... N11