

# ***Journal of Advanced Materials and Processing***

## **Islamic Azad University - Najafabad Branch**

**Founder:** Islamic Azad University - Najafabad Branch

**Editor-in-Chief:** Dr. Reza Ebrahimi-Kahrizsangi      Islamic Azad University, Najafabad Branch

**Managing Editor:** Dr. Hossein Monajatizadeh

Islamic Azad University, Najafabad Branch

**Executive manager:** Farid Naeimi

Islamic Azad University, Najafabad Branch

### **Editorial Board:**

Dr. Constantin Politis	(Professor of Physics and Materials Science, University of Patras, Greece)
Dr. Seeram Ramakrishna	(Professor of Mechanical Engineering, National University of Singapore)
Dr. Mohed Sapuan b. Salit	(Professor of Mechanical and Manufacturing Engineering, University of Putra Malaysia)
Dr. Abbas Najafizadeh	(Professor of Materials Engineering, Isfahan University of Technology, Iran)
Dr. Ahmad Saatchi	(Professor of Materials Engineering, Isfahan University of Technology, Iran)
Dr. Ali Saidi	(Professor of Materials Engineering, Isfahan University of Technology, Iran)
Dr. Ali Shafyei	(Associate Professor of Materials Engineering, Isfahan University of Technology, Iran)
Dr. Hossein Edris	(Associate Professor of Materials Engineering, Isfahan University of Technology, Iran)
Dr. Ebrahim Heshmat Dehkordi	(Associate Professor of Materials Engineering, Atomic Energy Agency of Iran)
Dr. Reza Ebrahimi-Kahrizsangi	(Associate Professor of Materials Engineering, Najafabad Branch, Islamic Azad University, Isfahan, Iran)
Dr. Ramin Ebrahimi	(Associate Professor of Materials Engineering, Shiraz University, Iran)
Dr. Masoud Kasiri	(Assistant Professor of Materials Engineering, Najafabad Branch, Islamic Azad University, Isfahan, Iran)
Dr. Hossein Monajatizadeh	(Assistant Professor of Materials Engineering, Najafabad Branch, Islamic Azad University, Isfahan, Iran)

### **Journal of Advanced Materials and Processing**

**Vol.2, No.1,** winter, 2014.

ISSN: 2322-388X

E-ISSN: 2345-4601

**Publisher:** Najafabad Branch, Islamic Azad University, Iron and Steel Association of Iran

**Production manager:** Mostafa Salehi

**Executive assistant:** Leily Rezaei, Marzie Kheradmand

### **Address: Journal of Advanced Materials and Processing**

Department of Materials Engineering, Najafabad Branch, Islamic Azad University, Najafabad, Isfahan, Iran  
P.O. Box: 517

**Tel:** +98-331-2292659      **Fax:** +98-331-2291008

**Website:** [www.jmatpro.ir](http://www.jmatpro.ir)

**Email:** journal.iaun@gmail.com

# CONTENTS

<b>A New Approach for Achieving Excellent Strain Homogeneity in Tubular Channel Angular Pressing (TCAP) Process</b> Gh. Faraji, F. Reshadi.....	3
<b>Effect of Titania Colloid Solution Concentration on Hydrophobicity of Well-Aligned TiO<sub>2</sub> Nanorods Synthesized via Hydrothermal Method</b> F. Karimkhani, H. Ghayour, B. Boka .....	13
<b>Influence of Cr dopant on the microstructure and optical properties of ZnO nanorods</b> S. Safa, A. Masoudi Nejad.....	19
<b>Sol-Gel Synthesis and Characterization of Alumina-15%Mullite Composite Nanopowder</b> A. Sedaghat, E. Taheri-Nassaj, G. Soraru, R. Ceccato, T. Ebadzadeh .....	25
<b>A Study on the Sub-Structure and Mechanical Properties of Friction Stir Processed AA 6061-T6 Joints with Ultra-Fine Grained Structure</b> A. Salemi Golezani.....	33
<b>3D finite element study of temperature variations during equal channel angular pressing</b> M. Shaban, A. Vajd, B. Mosadeg .....	47
<b>Evaluation of corrosion behavior on Mn-Cr austenitic steels using 0.1 M HCl solution</b> A. Fattah-alhosseini, B. Iyzadi, M. Asadi Asadabad.....	55