ISSN (ONLINE) : 2395-695X
ISSN (PRINT) : 2395-695X
Available online at www.ijarbest.com

International Journal of Advanced Research in Biology, Engineering, Science and Technology (IJARBEST)
Vol. 2, Special Issue 8, February 2016 in association with
KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY, VIRUDHUNAGAR
DEPARTMENT OF BIOTECHNOLOGY
ORGANIZES
DBT, NEW DELHI SPONSORED NATIONAL LEVEL CONFERENCE ON CONTEMPORARY TRENDS IN BIOENERGY AND GREEN TECHNOLOGY: CHALLENGES AND OPPORTUNITIES [ORA-2016]
(25-26TH FEBRUARY 2016)

NANOCOATING ZIRCONIUM ON ASTM A216 WCB CAST STEEL BY SOL GEL DIP COATING METHOD

Shanker[1], C. Bhagyanathan[2], C.Narendhar[3], Dr P. Karuppuswamy[4], Arun Raju[5]
[1]PG Scholar, Department of Manufacturing Engineering, Sri Ramakrishna Engineering College, Coimbatore, Tamil Nadu, India
[2]Assistant Professor, Department of Manufacturing Engineering, Sri Ramakrishna Engineering College, Coimbatore, Tamil Nadu, India
[3]Assistant Professor, Department of Nano Science and Technology, Sri Ramakrishna Engineering College, Coimbatore, Tamil Nadu, India
[4]Head of the Department, Department of Mechanical Engineering, Sri Ramakrishna Engineering College, Coimbatore, Tamil Nadu, India
[5]PG Scholar, Department of Manufacturing Engineering, Sri Ramakrishna Engineering College, Coimbatore, Tamil Nadu, India

Abstract

In this paper, Zirconium oxychloride is reacted with oxalic acid to form c zirconium oxalate which on sintering forms zirconium dioxide powder due to decomposition. The A216 WCB steel is dip coated in the sol and sintered in a chemical vapor deposition chamber till 800°C in the presence of argon gas to form the coating. The coating thus formed is characterized using XRD analysis, Scanning Electron Microscopy (SEM) and then the coating is tested for its corrosion by using Electrochemical workstation. Microstructural features and phase transformations of the synthesized thin films were characterized by X Ray Diffraction and Scanning Electron Microscopy.The corrosion behavior of the coated specimen shows improvement than the uncoated specimen that shows that the coated zirconia increases the corrosion resistance of the A216 steel specimen thus the coated specimen is useful for underwater applications.

Keywords: *A216L WCB Steel, Heat treatment, Sol–gel, ZrO2 thin film.*