SETSCI Conference Indexing System,
Volume 2 (2018), 65-65

ISAS 2018
I^st International Symposium on Innovative Approaches in Scientific Studies
April 11-13, 2018, Kemer-Antalya, Turkey

A Comparative Study of Quantitative Image Analyze and X-Ray Diffraction Methods for Carbide Amount in composite coatings on steel

Koray Kılıçay[1], Esad Kaya[1*], İsmail Bayar[1] and Mustafa Ulutan[1]
[1]*Mechanical Engineering Department, ESOGU, Turkey*
[*]*Corresponding author: esatkaya@ogu.edu.tr*
[+]*Speaker: esatkaya@ogu.edu.tr*
Presentation/Paper Type: Oral / Abstract

Abstract- Carbides change highly effective on the mechanical and tribological properties of the coatings. For this reason, it is very important to determine the carbide ratio in the microstructure correctly. Researchers mostly try to determine phase ratios by optical image in visually. In this study, the amount of carbides in coatings was measured by two different methods. In first method, the coatings are etched and optical microstructure photographs are taken. Microstructure photographs were examined with an image analyzer software. The percentage of the carbide phase fields in the microstructure is calculated as a percentage. The second method used is the X-ray diffraction technique, which gives more precise results but is an expensive method. XRD tests performed on the coating zone were analyzed and the carbide phase ratios were calculated from the pattern peaks. The results showed that phase ratio calculation with image analyzer as effective as XRD method.

Keywords- Micro Structure, Phase Ratio.