عنوان مقاله:

Improved Wear Resistance of the Fe-C-Ti Hardfacing Alloy by Nano TiCN Particles Fabricated by FCAW-N2

محل انتشار:

مجله مواد دوستدار محیط, دوره 2, شماره 2 (سال: 1397)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

In this investigation the Fe-C-Ti hardfacing alloy was fabricated by FCAW-N2 on AISI 1010 mild steel substrates, and then heat treatment was carried out on the samples. The OES, XRD, OM and SEM examinations and Rockwell hardness method were used for determining chemical composition, hardness and studying the microstructure of the hardface and heat treated samples. The OES examination results indicated that absorption of nitrogen in hardface sample was occurred. The XRD, OM and SEM examination results indicated that the microstructure of both hardface and heat treated sample, includes the ferrite with TiCN particles, but with different in size and distribute of the TiCN particles in microstructure. The microstructure of the heat treated sample had the nano scale of TiCN (500nm) with uniformly distribute at the ferrite matrix. The wear test (ASTM G 65) results indicate that the highest wear resistance is gained in the heat treated sample with maximum surface hardness. In addition, abrasive wear micromechanisms in steel substrate/ hardface / heat treated samples were recognized as: deep ploughing / ploughing + cutting / shallow ploughing + cutting respectively.

کلمات کلیدی:

Hardfacing, Nano TiCN, Abrasive Wear, Wear Micromechanism