Quantitative Analysis of the Cr-depleted Layer in the Heat Affected Zone

Abstract:

Intergranular stress corrosion cracking (IGSCC) has been observed in the heat affected zone (HAZ) of low carbon martensitic stainless steel. In this study, the authors assessed Cr-depleted zones at the grain boundaries by a STEM-EDX analysis and determined the morphology by deconvolution of the STEM-EDX results. Findings of the authors indicate that Cr-depleted zones of only a few nanometers in width are sufficient to cause IGSCC at the HAZ of low carbon martensitic stainless steel under certain circumstances.

1. Introduction

[illegible]

2. Experimental Procedure

[illegible]

[illegible]

[illegible]

3.3. Q a a i e E i a i f he C De ed Z e

Fig e 2

$$D = b_1 + d_1$$

$$b = \times \frac{Z}{E}\left(\frac{\rho}{A}\right) t$$

[illegible]tions. A summary of the distribution morphologies is shown in Table 3.)

[illegible]