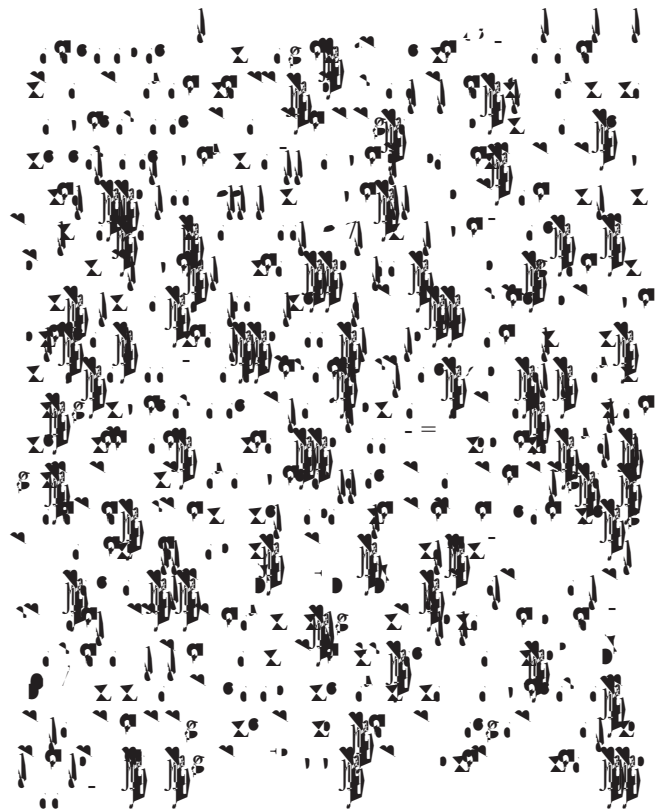
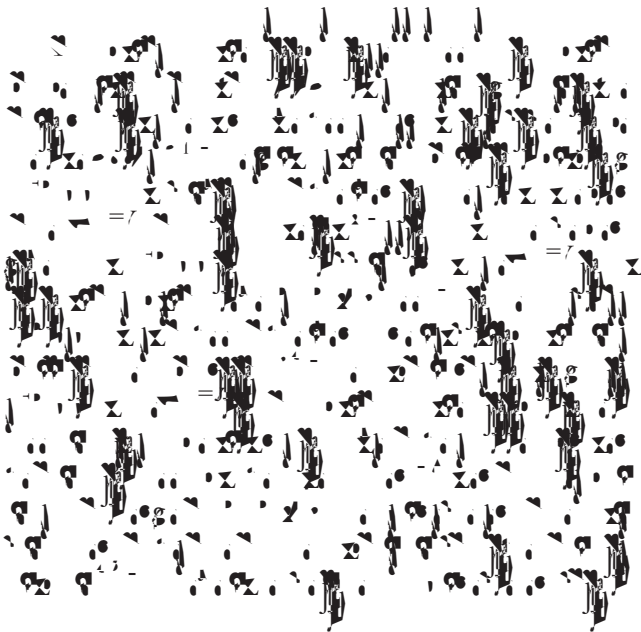


# Quantitative Analysis of the Cr-depleted Layer in the Heat Affected Zone

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



## 2. Experimental Procedure

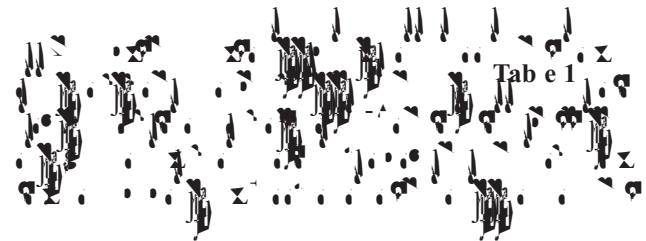
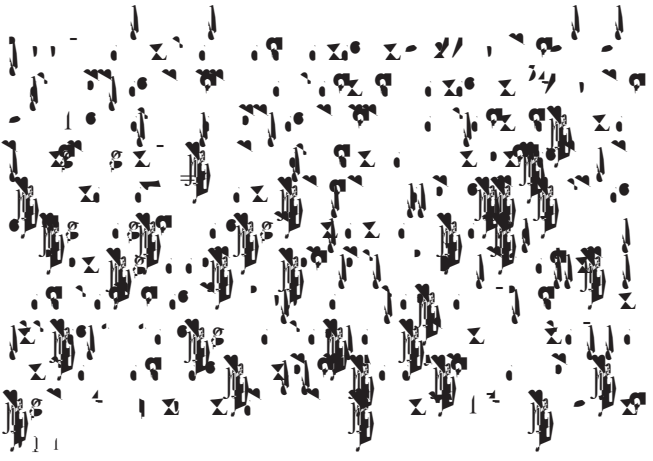
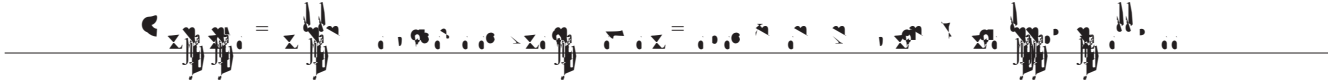
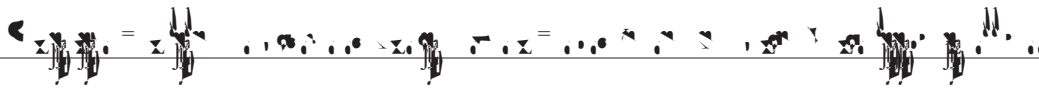
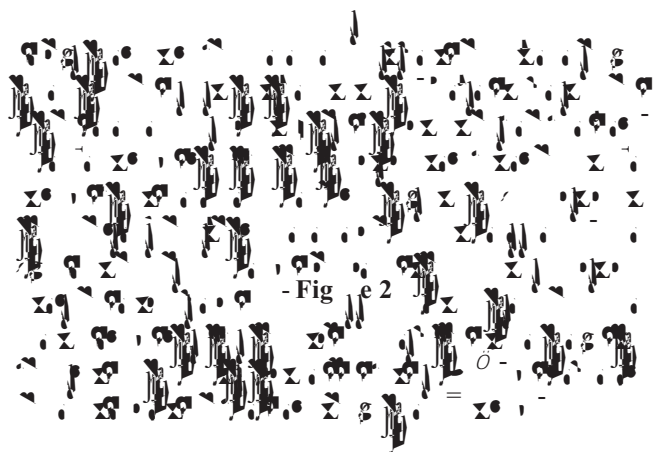
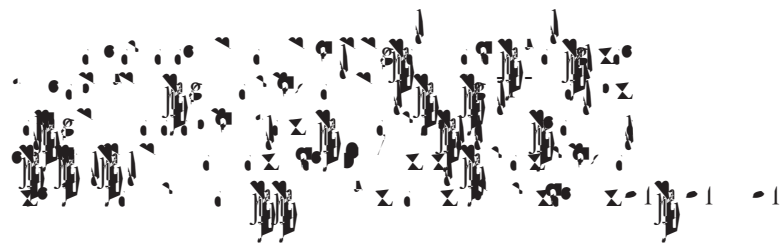


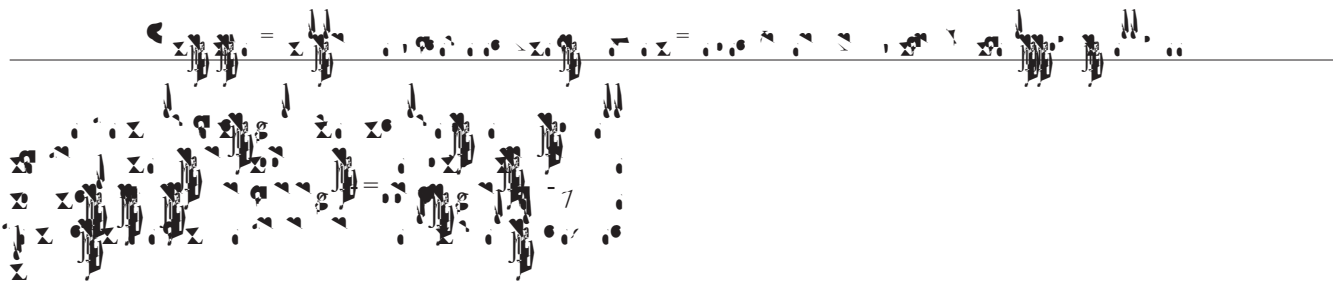
Table 1





### 3.3. Qualitative Evidences of the C-Deformed Zone

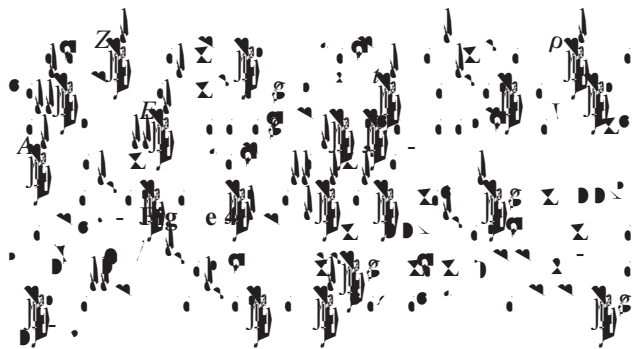




$$D_z = b_1 + d_1 \frac{1}{t_1} \quad 1$$



$$b = -1 \times \frac{Z}{E} \left( \frac{\rho}{A} \right) \frac{1}{t_1} \quad 2$$



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

