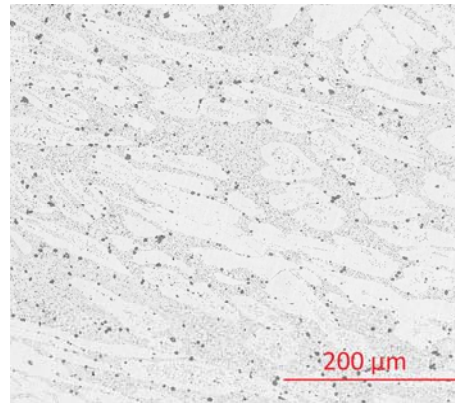


3/8/2019

Laboratory Assessment of Simulated Seawater Corrosion Resistance of Ni-Al-BronzeKen Benson, Dr. Alan Druschitz, Dr. Sean Corcoran and Dr. Bill Reynolds*Department of Materials Science and Engineering, Virginia Tech***Abstract**

The simulated-seawater corrosion resistance of Ni-Al-Bronze (UNS C63200) was determined using the cyclic polarization technique. Samples of UNS C63200 were heat-treated in the 1300° F (705° C) to 1700° F (925° C) temperature range overnight and then water quenched. One sample was given the standard anneal at 1225° F (665° C) for six hours and then air cooled. The samples were tested in ASTM D1141 synthetic seawater. Current as a function of voltage (versus the saturated calomel electrode) was measured. Both forward and reverse scans were applied to the samples. The forward scans showed distinct changes in the anodic peaks; with the lower heat treatment temperatures exhibiting anodic peaks at higher voltages. The annealed sample had the lowest anodic peak. Twenty-four hour potentiostatic and 1-hour open circuit tests were also performed.



Microscopy of annealed Ni-Al-Bronze

Biography

Ken is on his final semester for a M. Eng. in Material Science and Engineering (MS&E). His advisor is Dr. Alan Druschitz and his study is the corrosion resistance of heat treated Ni-Al-Bronze in simulated sea water. He has worked with Dr. Druschitz as a graduate student for two years. Ken currently have a BA in Physics from West Virginia Wesleyan College and a BS in MS&E from Virginia Tech.

