

**A Micro-electrochemical study of friction stir welded
Aluminum 6061-T6**

Paul E. Hintze* and Luz M. Calle
NASA Kennedy Space Center
* MS: ASRC-15
Kennedy Space Center, FL 32899

The corrosion behavior of friction stir welded Aluminum alloy 6061-T6 was studied using a micro-electrochemical cell. The micro-electrochemical cell has a measurement area of about 0.25 mm² which allows for measurement of corrosion properties at a very small scale. The corrosion and breakdown potentials were measured at many points inside and outside the weld along lines perpendicular to the weld. The breakdown potential is approximately equal inside and outside the weld; however, it is lower in the narrow border between the weld and base material. The results of electrochemical measurements were correlated to micro-structural analysis. The corrosion behavior of the friction stir welded samples was compared to tungsten inert gas (TIG) welded samples of the same material.

