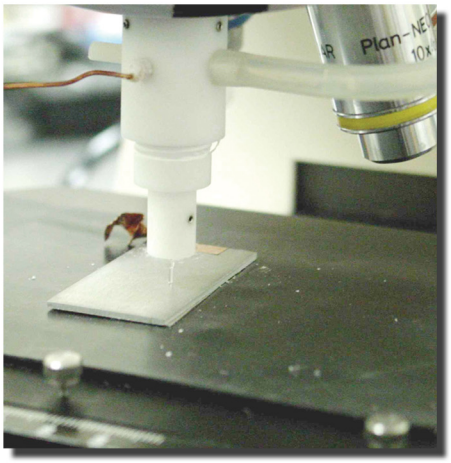
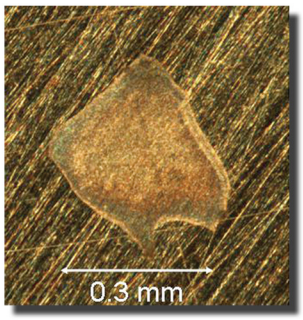
National Aeronautics and Space Administration

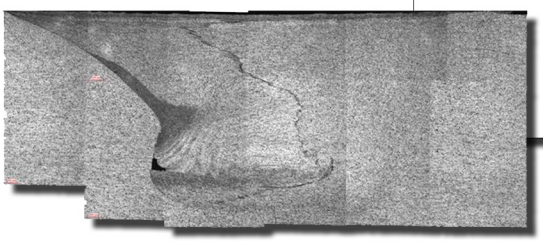
Technology Opportunity

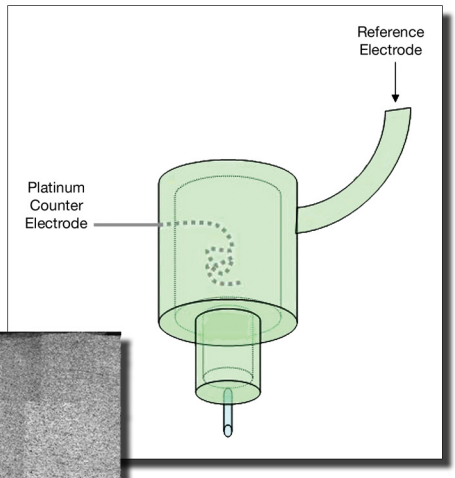
Microelectrochemical Cell for Corrosion Evaluation

The National Aeronautics and Space Administration (NASA) seeks to transfer the NASA-developed microelectrochemical cell for evaluating corrosion on small areas. The NASA Corrosion Technology Laboratory at the John F. Kennedy Space Center (KSC) has built a microelectrochemical cell for measuring electrochemical properties with a high spatial resolution. Using the cell for this type of measurement does not expose the entire sample to the electrolyte or other masking agent. This allows for many measurements to be made on a single sample, unlike conventional electrochemical tests. This is an ideal technique for measuring corrosion properties on materials that have highly different areas, such as welds.









Potential Commercial Uses

- The microelectrochemical cell can be used in corrosion research laboratories to examine small areas on metal surfaces.

Benefits

- Does not expose entire sample to electrolyte or masking agent
- Allows for many measurements on a single sample
- Makes all common electrochemical and corrosion measurements

Explore. Discover. Understand.

The Technology

The cell was developed to investigate the corrosion properties of a friction-stir weld. Friction-stir welding is a process in which frictional heat from a rotating bit touches a seam where two pieces of metal are placed together, softens the metals, then joins them. The microelectrochemical cell was used to show how the friction-stir welding process affected the metal's corrosion properties. The cell consists of a Teflon body for the electrolyte, ports for a capillary tube, counter electrode, and reference electrode. The electrolyte makes contact with the sample through the capillary tube. The device is mounted on a microscope in place of an objective so that the area being tested can be seen. The cell is rotated in and out of the optical path.

Options for Commercialization

NASA seeks qualified companies to commercialize the microelectrochemical cell for corrosion evaluation technology. This and other technologies are made available by the KSC Technology Transfer Office. NASA transfers valuable technologies to industry through patent and copyright licenses, cooperative agreements, and reimbursable and nonreimbursable Space Act Agreements. The microelectrochemical cell technology transfer is available at no cost.

Contact

If your company is interested in the microelectrochemical cell for corrosion evaluation, or if you desire additional information, please reference Case Number KSC-12935 and contact:

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Commercialization Checklist

- Patent Pending
- U.S. Patent
- Copyrighted
- Available to License
- ✓ Available for no-cost transfer
- Seeking industry partner for further codevelopment

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