



## World Energy Labs

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### **Partnership between NASA's Cell Mimetic Space Exploration (CMISE) project and World Energy Labs**

San Francisco, California, May 25, 2004 -- The rapid development of electrochemical (fuel cell) energy conversion over the past 40 years is a direct consequence of NASA's decision to harness the technology for manned space exploration. Now World Energy Labs' proprietary time domain (TDS) and frequency domain spectroscopy (FDS) is being used in NASA's CMISE project to help develop versatile new fuel cell technologies for space exploration.

In contrast to older electrochemical testing methods TDS and FDS are non-destructive, can be applied during cell operation and are able to yield the complete electrical and electronic characteristics of the cell under test. In particular World Energy Labs (WEL) is working to adapt time domain spectroscopy for the complete characterization of fuel cells. In WEL's proprietary technology, a train of arbitrary-shaped current pulses is applied to the device under test and the complete potential response of the device is recorded. The technology is capable of resolving the different electrochemical phenomena occurring either at one electrode (half cell setup) or in a complete fuel cell. The flexibility of the excitation signal provides sufficient versatility to resolve both fast and slow electrochemical processes.

Furthermore the process can be applied during fuel cell operation, making possible for the first time the study of complex interactions among electronic and ionic processes. As a result of the collaboration, CMISE and WEL expect to develop this technology into a powerful new technique for the study, modeling and online monitoring of fuel cell systems.

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