



## TECHNOLOGY

# SOFC Anode Material by Flame Spray Pyrolysis

## OVERVIEW

In recent years, the Ni/YSZ (YSZ: Y<sub>2</sub>O<sub>3</sub>-stabilized ZrO<sub>2</sub>) cermet anode has been shown to be very promising for use in Solid Oxide Fuel Cells (SOFCs). However, stability at high temperatures (~1000 °C) is required for long-term operation of such cells.

In general, Ni grains in a Ni/YSZ cermet sinter easily at temperatures over 800°C, and this sintering leads to the degradation of the performance of the SOFC. To obtain Ni/YSZ cermet anodes that are stable at high temperatures, it is essential to prevent sintering of Ni grains in the anode. Previously, it was reported that a new anode structure in which fine YSZ grains are dispersed on the surface of Ni grains improved the stability of a Ni/YSZ cermet anode. However, high stability as well as high electrochemical activity is also important for the Ni/YSZ cermet anode as the electrochemical activity strongly depends on a three-phase boundary (TPB) created among Ni grains, YSZ grains and pores.

Researchers at the University of Maryland have developed a spray pyrolysis technique that creates in a one step process a high temperature electrode of very good stability and having good electrochemical properties.

If you would like to review additional information or further discuss the technology with the inventors please contact the Office of Technology Commercialization at 301-405-2924 or [otc@umd.edu](mailto:otc@umd.edu)

## CONTACT INFO

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## Additional Information

### INSTITUTION

University of Maryland, College Park

### PATENT STATUS

Patent(s) pending

### LICENSE STATUS

Contact OTC for licensing information

### CATEGORIES

- Chemical

## EXTERNAL RESOURCES

- [US Patent 7,842,200](#)

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