Non-Confidential Description - PSU No. 3129
“Sulfur Tolerant and Carbon-Resistant Catalysts”

**Keywords:**
Hydrocarbon reforming, sulfur tolerance, catalysts, fuel cells, carbon formation

**Links:**
- Published Patent Application
- Inventor Website

**Inventors:**
Chunshan Song, James J. Strohm, Jien Zheng, Weidong Gu, Chao Xie, Xiaoxing Wang

**Background**
Hydrogen-based fuel cells continue to attract widespread attention as an alternative energy source. However, more widespread use of such fuel cells continued to be hampered by the lack of a hydrogen storage infrastructure. An alternative to storing hydrogen for use in fuel cells is to create hydrogen by reforming processes for hydrocarbon fuels right at the fuel cell location. However, the reforming approach is hampered by rapid catalytic deactivation in the reformer due to carbon formation and/or sulfur poisoning.

**Invention Description**
This invention describes a group of bimetallic and trimetallic catalysts for use in both steam reforming and oxidative steam reforming of liquid fuels. These catalysts have a high degree of sulfur tolerance and are resistant to carbon formation. The catalysts are highly active and can be used at low temperatures of 500 to 600 degrees C.

**Advantages/Applications**
- High degree of catalytic activity during fuel reforming processes
- Effective with steam reforming or oxidative steam reforming
- Catalysts function well at low temperatures – 500 to 600 degrees C
- A variety of fuels have been reformed using the catalysts at laboratory scale