DESIGNER CATALYSTS FOR NEXT GENERATION FUEL SYNTHESIS

TECHNOLOGY READINESS LEVEL: 4

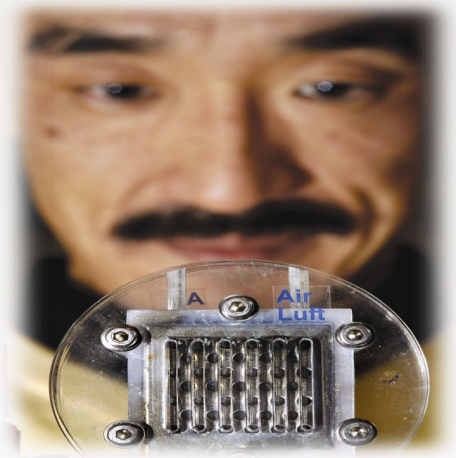
EARLY LAB PROTOTYPES HAVE DEMONSTRATED PROOF-OF-CONCEPT

US PATENT # 7,951,747

TECHNOLOGY SUMMARY

Transition Metal Sulfides (TMS), such as molybdenum disulfide (MoS_2), are the petroleum industry's "workhorse" catalysts for upgrading heavy petroleum feed stocks and removing sulfur, nitrogen and other pollutants from fuels. This improved synthesis technique produces single layer transition metal sulfide (SLTMS) catalysts, such as molybdenum disulfide, with potentially greater activity and specificity than those currently available.

This "bottoms-up" synthesis approach of single layer– TMS catalysts makes them extremely uniform, implying the reactivity should be tunable for specific reactions. Next generation fuel cells will likely rely even more heavily on these types of reactions.



POTENTIAL APPLICATIONS

- Bio-fuel production
- Hydrogen generation
- Direct coal liquefaction
- Oil refining

TECHNOLOGICAL BENEFITS

- Uniformly allows specially tunable reactions
- The next generation of fuel cell synthesis points towards growing trend in these "workhorse" catalysts
- Provides greater efficiency through nanomaterials

TECHNOLOGY INQUIRY?

For more information or licensing opportunities contact us at

ip@sandia.gov

Refer to SD # 11218

or visit

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