Congressional Notification Profile
DE-FOA-0000215
Engineering Design of Advanced H_2-CO_2 Membrane Separations
Phase 2 Down-selection

Background Information

The Department of Energy (DOE) issued this funding opportunity announcement to solicit research that will focus on hydrogen separations technology, including advanced separation membranes (inorganic, metallic and both materials), that provide high purity hydrogen and/or offer a combination of hydrogen separation with low-cost removal of carbon dioxide (CO_2) and other trace impurities from hydrogen-CO_2 mixtures. The latter may involve improved membrane or adsorption systems that build upon and improve current separation efficiencies or development of new separation strategies.

The primary purpose of this research effort is to demonstrate the separation of hydrogen from coal (or coal-biomass) derived syngas via membranes at the pre-engineering/pilot scale. The DOE's National Energy Technology Laboratory has sponsored a number of laboratory- and bench-scale membrane development efforts over the past years, and scale-up and testing at the pre-engineering/pilot scale is a logical extension of this work.

The selected projects will conduct research, development and demonstration (RD&D) at the pre-engineering/pilot scale for innovative membrane materials, concepts and strategies which separate hydrogen from a coal (coal-biomass)-based syngas with performance that is sufficient to meet the DOE 2015 targets of flux, selectivity, cost and chemical and mechanical robustness.

Applications selected under this announcement resulted in four Phase 1 awards. Based on technical merit during Phase 1 and availability of funds, two of the Phase 1 recipients were selected to advance to Phase 2 of membrane research and development.

Project Information

Project Title: *Engineering Design of Advanced H_2-CO_2 Pd and Pd/Alloy Composite Membrane Separations and Process Intensification*

Worcester Polytechnic Institute in collaboration with Membrane Technology and Research, Menlo Park, Calif.; Johnson Matthey, West Chester, Pa.; and T3 Scientific, Blaine, Minn.; will demonstrate hydrogen separation from coal-derived syngas using palladium (Pd) and Pd alloy membranes on porous metal supports. Gasification testing under this project will be conducted at the Power Systems Development Facility/National Carbon Capture Center in Wilsonville, Ala.

Contractor Information

Recipient: Worcester Polytechnic Institute
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Worcester, MA 01609-2280

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Financial Information

Length of Contract: 36 months

Government Share:	$3,999,906
Contractor Share:	$ 999,977
Total Value of Contract:	$4,999,883