

# Technology Licensing Opportunity

Non-Confidential Summary



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## CATALYSTS FOR THE CONVERSION OF SYNTHESIS GAS TO ALCOHOLS

ROI # 10-014

### ***Opportunity:***

Researchers at the University Saskatchewan have developed a new catalyst and process for selective synthesis of higher alcohols with a carbon number greater or equal to two. The new Co-Rh-Mo-K catalyst supported on multi-walled carbon nanotubes adds significant value to the process.

### ***Background:***

Catalytic conversion of synthesis gas to alcohols is advantageous as this uses forest, agricultural surplus, and household waste and does not compete with the feed grains available for human need or use finite resources.

Gasification with syngas conversion to ethanol represents one of the cellulosic pathways to produce biofuels. The process allows the use of feedstock biomass which is heated and converted into syngas. A wide range of feedstocks may be used in this process. The yield of the syngas conversion into alcohol is 80-111 gallons valued at \$0.24 per gallon. The process of conversion has low operating costs but because the industry is extremely price sensitive further improvement of the technology is necessary to overcome the economical constraints of production costs.

### ***Invention benefits:***

- Cost efficient process selectively produces higher alcohols
- New active, stable and efficient pelletized catalyst
- Use of multi-walled carbon nanotubes (MWCNTs): High surface area, porous nature and attractive textural properties of MWCNTs enhance loading, diffusion and subsequent heavy metal dispersion during HAS

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### *Researcher profiles:*



Professor Ajay Dalai's research areas include environmental catalysis such as alkylates from butane using solid acids and conversion of sulphur containing compounds from gases and waste water and other streams; chemical process and product development; upgrading and hydro-treating of hydrocarbon fluids; renewable energy such as hydrogen and bio-diesel from bio-mass and bio-oils; value-added chemicals from glycerol; production and applications of activated carbon for mercury removal from flue gases; production of carbon nanotubes, and their catalytic applications.

### *Patent Status:*

US patent application # 13/457893 was filed on April 27, 2012, Canadian patent application # 2739142 was filed on May 6, 2011, Australian Patent application # 2011101096 was filed on May 6, 2011.

### *Publications:*

Boahene PE, Surisetty VR, Sammynaiken R, and Dalai AK. Higher Alcohol synthesis Using K-Doped CoRhMoS<sub>2</sub>/MWCNT Catalysts: Influence of Pelletization, Particle Size and Incorporation of Binders. Topics in Catalysis 2013 (December).

### *Development Stage:*

Product is ready for licensing to a commercial partner  
The Dalai lab is very active in this research area and has the potential to scale up the use of the catalyst at an industrial scale.

### *For more information, please contact:*

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