



THE UNIVERSITY OF  
**KANSAS**

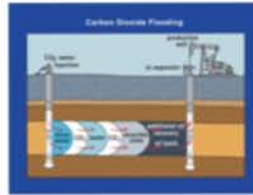
# Oil & Gas Recovery Research

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**Chemical & Petroleum Engineering Department**

**Tertiary Oil Recovery Project**

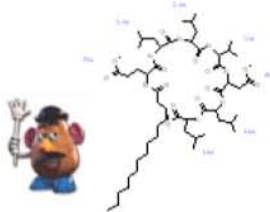
- Sequestration of CO<sub>2</sub> produced from ethanol plants in geologic formations while improving oil recovery
- DOE funded Field demonstration project (collaborating with Kansas Geological Survey)



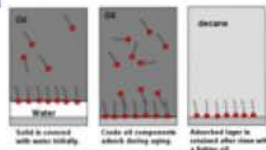
## Carbon Sequestration & Improved Oil Recovery

## Nano Technology for Oil & Gas Applications

- Nano scale chemical delivery system for oil and gas applications (collaborating with ConocoPhillips)
- Controlled release technologies derived from drug release research (collaborating with Dept. of Pharm. Chem.)



- Biosurfactants produced from agriculture waste streams for wettability alternation (collaborating with Idaho National Lab)
- Alkali/surfactant/polymer injection to improve oil recovery (collaborating with Dept. of Geology)
- Polymer gels for water shutoff and conformance control



## Chemical Injection for Enhanced Oil Recovery

## Flow Assurance

- Dynamic wax deposition modeling
- Scale inhibition
- Hydrate inhibition



# KU TORP Research Program



## Externally Funded Oil & Gas Recovery Research

“Near Miscible CO<sub>2</sub> application to Improve Oil Recovery for Small Producers,” Total Funding: **\$1 million**; Funding Agency: **RPSEA**; May 21, 2008 - May 20, 2012

“Bridging the Gap between Chemical Flooding and Independent Oil Producers,” Total Funding: **\$1.5 million** ; Funding Agency: **US Department of Energy**; Oct. 1, 2008 – March 31, 2012

“Chemical Delivery Via Nano Technology” Joint Development Agreement with **ConocoPhillips**, 2008 – 2012: Total Funding: **\$2.4 million**

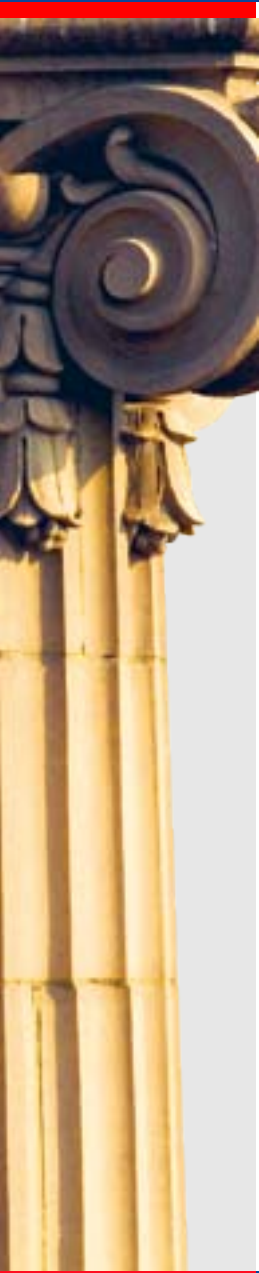
**Total External Funding: \$4.9 million**

# Research Outcomes

## New Technologies for Oil & Gas Field Applications

- **Nanoized Crosslinkable Polymer Particles**
  - **Product development phase complete**
  - **Licensing agreement negotiations underway**
- **Nanoscale Chemical Delivery Systems**
  - **Product development phase complete**
  - **Ready for Commercialization**
- **More oil and gas recovery technologies ready for commercialization in the near future**





*Thank You*