Current Projects and Accomplishments:

With petroleum prices increasing and dependence on foreign oil becoming an issue of national security, the Sustainable Energy Research Center (SERC) is working to create alternative fuel sources with resources readily available in the Southeast. There is an abundance of biomass from agricultural and forest waste products in the state of Mississippi and SERC is working on ways to create synthesis gas from such materials. By combining heat, steam, and wood through a process known as gasification, this biomass can then be made into synthesis gas. In order to fully utilize all products made of such biomass, SERC is looking at different ways the pulp and paper industry can become centers for syngas conversion. Converting gas to liquid hydrocarbons takes place with the use of novel catalysts in hopes of creating gasoline. These catalysts can also be used to create methanol and other fuels.

Scientists at SERC are now working on creating a catalyst that would make nearly ten times the amount of gasoline than previous conversions.

Since June 2006, SERC has been working on creating more practical ways to convert synthesis gas to gasoline. In the past, the completion of such conversions has taken two steps and the use of two catalysts. Through much research and experimentation, we have eliminated a whole step in the conversion process. With this elimination, scientists need only one step and one catalyst to make the conversion take place. Such findings will help decrease the cost to convert synthesis gas by nearly one-half.

Future Projects:

SERC researchers plan for this conversion technology to be used commercially and in the private sector. SERC also plans to create catalysts that make only butanol, a fuel closer to gasoline than ethanol. We look for future research to help create fertilizers, methanol-based chemicals and even an ethanol-based substitute.