

## Developing the US bioeconomy within a global context

Abstracts:

*Developing New Feedstock for the Bioeconomy, Tim Rials, Director, Center for Renewable Carbon, University of Tennessee.*

Reliable access to a uniform, consistent and high-quality biomass feedstock for the production of fuels and chemicals is a fundamental consideration impacting development of the next phase of the bioeconomy. The southeastern United States is well positioned to meet the feedstock demands and expectations of the industry. With more than 30 million acres of commercial pine plantations supporting a vibrant forest products industry, woody biomass is immediately available from ongoing operations. New biomass crops, both herbaceous and woody, offer the potential to supplement the current supply with feedstock that is engineered for optimal performance in different conversion processes. Recent work by The IBSS Partnership and related programs has produced new information on short-rotation woody crops (SRWC), and advanced the potential role that this biomass production system will play in the region's feedstock portfolio. This presentation will introduce SRWC technology, highlighting management options and yield potential for hybrid poplar. Additionally, key characteristics of the biomass that influence its utility as a feedstock for chemicals production will be discussed.

*Thermochemical conversion of biomass to fuels and other products, Stephen C. Chmely, Research Assistant Professor at the Center for Renewable Carbon (CRC) at the University of Tennessee.*

Thermochemical conversion pathways— primarily fast pyrolysis and gasification— are part of a suite of technologies that allow for the production of liquid fuels and other products from biomass. During fast pyrolysis, biomass is heated in the absence of oxygen to produce a liquid product called bio-oil. In contrast, gasification of biomass produces a mixture of carbon monoxide and hydrogen, which are useful synthetic building blocks for other compounds. While these technologies could form the centerpiece of a growing bio-economy based on renewable raw materials, there exist a number of technical and economic challenges to their widespread implementation. An overview of these technologies, including a brief history, the state of the art, and future directions will be presented.

*Indirect Effects of Bioenergy: International Standards and Science, Research and Development Associate, Oak Ridge National Laboratory*

In 2009 the International Organization for Standardization (ISO) created a project committee to develop an international standard on Sustainability Criteria for Bioenergy. The task to consider the science of “indirect effects” from bioenergy production (e.g., indirect land use change - ILUC) was assigned to the working group led by the authors of this presentation. This group reviewed and critically assessed over 160 publications (e.g., approaches to model ILUC), which guided the development of the standard based on consensus. The current state of science of indirect effects, was determined to be “nascent and rapidly evolving” and the international standard has been limited to the direct effects – those effects under the direct control of the economic operator and caused by the process being assessed. This presentation will summarize key results on the scientific debate over indirect effects and specifically address the link to the growing biofuel trade, US landowners and biomass producers. The use of ILUC in other standards will also be discussed and we will offer some conclusions regarding the implications of including indirect effects in policy.