

# seminar

## "A Perspective on Renewable Bioenergy in the Water | Energy | Environment Nexus"

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### abstract

Integrating biochemistry of storage carbon metabolism of algae and plants to produce biofuels and bioproducts, is needed to removing key barriers that currently limit overall carbon efficiency, photosynthetic efficiency and ultimately productivity in the context of limiting resources. Addressing critically needed improvements in biomass, bioproduct and biofuel productivity is a priority and one that is guided by supporting economic and sustainability principles. Exploiting pathways for the integration of engineering approaches with fundamental biochemistry of photosynthetic organisms may help to unravel the contentious water-food-energy-environment nexus that algae inhabit. Despite significant technical progress in the past 5-6 years, economical and sustainability challenges are still accompanying the future development of an algae-based bioeconomy, driving the development of combined biofuels and bioproducts pathways. I will present results from a number of recent projects that each support different aspects of a conceptual algae biorefinery, with each project addressing one of the main identified barriers to future deployment. In this seminar, I will provide an overview of the knowledge base that could support a new research program.

### biosketch

Lieve Laurens, PhD., is a senior research scientist in the Bioprocess Research and Development group at the National Renewable Energy Laboratory, primarily responsible for research in analytical biochemistry. She has over 15 years of experience in biotechnology, applied to plants, algae and microbial organisms with a focus on bioenergy and has worked in national laboratories as well as in academic and industrial environments, covering algae and plant biochemistry, cell biomass conversion and characterization, techno- economic analysis, and biotechnology. She leads multiple projects on characterization and conversion and holds a leadership position within the ATP3 network and the establishment of standardized methods in the algal biofuel sector. Dr. Laurens is currently the chair of the Algae Biomass Organization's Technical Standards Committee where she leads the development of the guidance document for Industrial Algae Measurements for biomass, bioproducts, and biofuels development from algae.

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Seminar is free and available via Abode Connect <https://connect.asu.edu/thepolytechnicschool/>

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