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# BIOFUELS AND BIOENERGY

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### Cellulosic biofuels: Realizing climate benefits and new processing paradigms

Estimation of the climate impacts of biofuels and bioenergy has in general been approached by asking what would be the consequences of deployment assuming land use and other decisions were made without regard to climate. Drawing on recent analysis, the author will demonstrate that different answers result if instead we ask how bioenergy should be produced in order to achieve climate benefits. Notwithstanding important advances, the cellulosic biofuels field has fallen far short of expectations over the last decade and it is clear that technological readiness was widely overestimated. In response to this circumstance, advancing the cellulosic biofuels field needs to be more open to stepwise deployment taking advantage of niche opportunities, and to direct research and development effort to both established processing paradigms and new processing paradigms. Consolidated bioprocessing with treatment will be considered as an example of the latter.

### Biography

Lee Lynd is an expert on the production of energy from plant biomass and conducts leading research on microbial cellulose utilization. His H-Index of 59 (Google scholar) is among the highest of researchers with primary activity in the bioenergy field. He has authored over 200 papers, book chapters, and reviews spanning both laboratory research and visionary analysis. In addition to leading his research group, his activities at Thayer School include teaching the undergraduate systems course as well as graduate courses in metabolic engineering and energy systems, and curriculum development and strategic planning in the energy area.

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