

Stephen Dooley

- Position and affiliation

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- Title:

Toward More Fundamental Reaction Kinetics for Biomass to Bioenergy.

- Brief summary

In this presentation, progress in the building of a more fundamental understanding of the reaction kinetics occurring in the chemical conversion of biomass to higher value energy carriers is discussed. A brief review of the state of art is given, before exploring the potential for detailed descriptions of lignocellulose reaction kinetics, in which more precise definitions of lignocellulose chemical structure, and actual fundamental molecular thermodynamic quantities are emphasized. This concept is first explored in the case of hemicellulose pyrolysis. It is secondly explored for the instance of the acid hydrolysis transformation of waste biomasses, and discrete carbohydrates, to drop in advanced biofuel formulations. The potential usefulness of the concept are speculated upon, before concluding with analysis of the factors limiting to progress.