

## Conversion of biomass to biobased-*para*-Xylene

### A Formal Synthesis of Biobased-Polyethylene Terephthalate (bio-PET)

Unsustainable, fossil based plastic—polyethylene terephthalate (PET)—dominates the current plastic bottle industry. The plastic bottle industry desires to instead produce a bio-based PET bottle to improve the carbon footprint of their packaging. PET, a thermoplastic, is a product of the polymerization of mono ethylene glycol (MEG) and purified terephthalic acid (PTA). These two monomers are almost entirely sourced from fossil sources. While there are a few commercial efforts to produce bio-based MEG from ethanol, bio-based PTA remains unavailable in the market. PTA is synthesized commercially through the oxidation of isomerically pure *para*-xylene, and *para*-xylene is a product of oil refining.

Origin Materials Inc. is a chemical company in West Sacramento, California, that converts biomass to commodity chemicals and resins. They have recently developed and piloted technology that will convert biomass—not oil—to polymer

grade *p*-xylene. They are planning to start construction on a first-of-a-kind commercial demonstration plant in the near future. This talk will introduce Origin Materials and aspects of its core technology.

### Dr. Makoto Masuno

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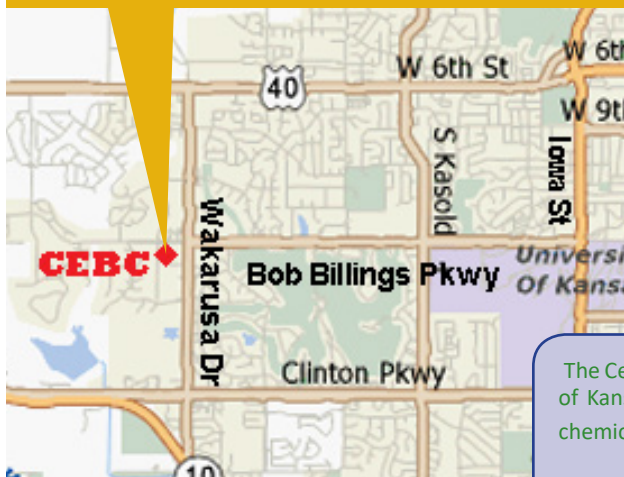


### About the presenter

*As Head of Origin Materials R&D, Dr. Masuno oversees the Chemistry, Analytics departments. His areas of expertise include natural product biosynthesis & biomimetic synthesis, pathway development and optimization, and structure/property relationships. In addition, he has an excellent knowledge of carbohydrate dehydration chemistry, having contributed to the design of Origin Materials furanics platform process and scale up to *para*-xylene production. Dr. Masuno currently has 15 publications and granted patents within 12 patent families, along with several pending and provisionally filed patent applications. He received his B.S. in Chemistry from Westmont College and his PhD in Synthetic Organic Chemistry from the University of California, Davis.*

**9:00 a.m. Tuesday  
October 16, 2018**

CEBC Seminar Room, B104  
Building B, 1501 Wakarusa Drive,  
Lawrence, KS



The Center for Environmentally Beneficial Catalysis (CEBC) at the University of Kansas and its partners are developing green technologies to help the chemical industry prevent waste and conserve the earth's natural resources.

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