

## Dr. Maria Cuellar Soares

Professor, Bioprocess Engineering

**Delft University of Technology, The Netherlands**

Maria C. Cuellar Soares is a food engineer from Colombia. She moved to The Netherlands in 2001, where she completed cum laude her Professional Doctorate in Engineering (PDEng) in Bioprocess Design at Delft University of Technology (TU Delft). After completing her PhD on integrated fermentation and crystallisation in 2008, under the supervision of Dr. Adrie Straathof, Prof. Sef Heijnen and Prof. Luuk van der Wielen, she joined the Bioprocess Engineering group as assistant professor achieving tenure in 2014 ([www.bt.tudelft.nl/bpe](http://www.bt.tudelft.nl/bpe)). Maria's research style consists of addressing the fundamentals of application-driven questions through design-inspired, systematic approaches combining experimental and modelling tools.

She is actively involved in TU Delft's MSc program in Life Science & Technology and the PDEng program in Bioprocess design. She has participated in knowledge valorisation activities such as the conceptual design of the Bioprocess Pilot Facility (BPF, [www.bpf.eu](http://www.bpf.eu)) and is co-founder of the start-up Delft Advanced Biorenewables (DAB, [www.DelftAB.com](http://www.DelftAB.com)).

### **“An Unsettled Matter: Challenges and Opportunities in Integrated Multiphase Bioprocessing”**

Industrial biotechnology is making an important contribution to renewable processing. Next to the already well-established processes for alcohol biofuels, carboxylic acids and antibiotics, the last years have seen the implementation at industrial scale of a broad range of bioprocesses. These developments have without doubt been achieved through the advances made in the rational engineering of the microbial cell towards novel products or feedstocks. Most of these processes, though, are yet to be proven competitive. This is partly due to a traditional approach in bioprocessing in which the microorganism is developed first, leaving the process technology and scale-up as a subsequent task. This urges for an integrated approach where product recovery and scale-up are taken into account already during selection and engineering of the microorganism.

Novel microbial routes such as the isoprenoid pathway have led to multiphase systems where the product is formed as a volatile (e.g. isoprene, monoterpenes), an organic phase (e.g. sesquiterpenes) or solids (e.g. higher terpenes). These phase-separating products offer thus tremendous opportunities for integrated bioprocessing. In this talk I will illustrate how we are incorporating process recovery and scale-up at early stages of bioprocess development, with an emphasis on our work on systems containing an organic phase.



**DATE:**  
**October 6, 2016**  
**TIME:**  
**11:00 a.m.**  
**LOCATION:**  
**366 CLB**

