

UC SAN DIEGO NANOENGINEERING SEMINAR
Tuesday, October 23rd, 2018 11:00am – 12:00pm
LPSOE Faculty Recruitment Seminar Presentation
ASML Conference Center (SME 248)

**“Industry Methods for Implementing Fundamental
Chemical Engineering Knowledge in Transport Phenomena”**

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Abstract: Transport phenomena (heat, mass, and momenta transport) is one of the most difficult topics in the chemical engineering curriculum. Nonetheless, an understanding of this topic is necessary for any chemical engineer to flourish in industry or academia. In this lecture I will introduce the concept of shell balances and how they are used to derive the conservation equations and diffusion equations (e.g., Fick’s, Fourier’s, and Newton’s Laws). I will explain how parallels in the concepts of transport phenomena can be drawn by the Chilton-Colburn analogies. Then I will highlight instances in my engineering career where a knowledge of transport phenomena was critical, drawing examples from my time in the semiconductor, pharmaceutical, and petrochemical industries. Lastly, I will introduce the method of model-based problem solving (MBPS), a critical methodology that is becoming vital in the modern engineering workplace. MBPS has grown in popularity across various sectors for its practical approach in applying fundamental knowledge to solve any general engineering problem. Using fundamental concepts, real-world examples, and MBPS, the goal of this talk will be to vibrantly link textbook to practical application.

Biosketch: Brandon Marin was born and raised in Los Angeles, CA. After receiving his Bachelor’s in Chemical Engineering from the University of California (USC) in 2011, Brandon worked as a validation engineer for Baxter Bioscience where he worked on qualifying process and metrology equipment under strict pharma compliance standards. In 2012, Brandon began graduate studies at UC San Diego, where he earned his Master’s in NanoEngineering (2013) and his PhD in Chemical Engineering (2017) for his work in enhanced light-matter interactions for biosensing. At UC San Diego, Brandon taught numerous courses in the chemical engineering curriculum and was awarded the Paul and Barbara Saltman Distinguished Teaching Award by the Academic Senate and Chancellor for his efforts in serving future engineers. In 2017, Brandon joined the Substrate Packaging Technology Development group at Intel Corporation, where he currently works as a Research & Development Engineer. At Intel, he works on developing new materials and disruptive processes for semiconductor products slated for release beyond 2021. Brandon has authored nine publications in various fields ranging from microfluidics to near-infrared plasmonics to wearable sensors. Brandon also holds over a dozen pending and issued patents in academia and industry. In 2016, Brandon married his wife, Anastasia, who is also a USC-educated chemical engineer. They currently reside in Chandler, AZ with their dog, Ivy. In his free time, Brandon enjoys skateboarding, surfing, and snowboarding, along with playing the guitar and the drums.