Episode abstract

If you thought chemistry is basically just boiling stinky mixtures in a flask, this is the episode for you. There is no better demonstration for how chemistry is foundational to practically all sciences and technologies. What Dr. Tina Li does at CMC Materials is find new ways to ensure semiconductor layers in electronic components manufacturing are as smooth as possible, to allow the deposition of as many layers as possible on a single wafer. This is the key to enable increased complexity and computational power for all electronic devices.

Dr. Li explains how this “sanding” at the nanoscale level works. Selective chemical reactions work in synergy with abrasion to achieve unbelievable levels of smoothness, measured in nanometers. We discuss the chemistry that helps enable our smartphones and computers, but also about a journey of nanometers. We discuss the chemistry that helps enable our smartphones and computers, but also about a journey of nanometers. We discuss the chemistry that helps enable our smartphones and computers, but also about a journey of nanometers. We discuss the chemistry that helps enable our smartphones and computers, but also about a journey of nanometers. We discuss the chemistry that helps enable our smartphones and computers, but also about a journey of nanometers.

Tina’s Content Recommendations:

- An Astronaut’s Guide to Life on Earth (a book by Chris Hadfield)
- The 7 Habits of Highly Effective People (a book by Stephen R. Covey)
- Working Women: Valerie Jarrett and the Importance of Mentorship (The Michelle Obama podcast)
- The Surprising Power of Questions (an HBR post by Alison W. Brooks and Leslie K. John)
- No Rules Rules: Netflix and the Culture of Reinvention (a book by Reed Hastings & Erin Meyer)

About our guest

Tina C. Li, PhD
Customer Technology Engineering Director,
CMC Materials

Tina’s Company site:
https://www.cmcmaterials.com/

C&EN’s Talented 12 profile of Tina:
https://cen.acs.org/materials/electronic-materials/Tina-Li/97/i33

Recent Publications from Tina:

- CMP Solutions for 3D-NAND Staircase CMP
- SiO2 Aerogel Templated, Porous TiO2 Photoanodes for Enhanced Performance in Dye-Sensitized Solar Cells Containing a Ni(III)/(IV) Bis(dicarbollide) Shuttle
- Ni(III)/(IV) Bis(dicarbollide) as a Fast, Noncorrosive Redox Shuttle for Dye-Sensitized Solar Cells
- Electronic tuning of nickel-based bis(dicarbollide) redox shuttles in dye-sensitized solar cells
- Surface Passivation of Nanoporous TiO2 via Atomic Layer Deposition of ZrO2 for Solid-State Dye-Sensitized Solar Cell Applications