

2018 NSF Nano Grantees Conference

Panel 6: Atomically Precise Manufacturing (APM)

Moderators:

Sridhar Kota, Mforesight, Univ of Michigan

David Forrest, Department of Energy

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The interest in Atomically Precise Manufacturing (APM)

What is APM?

- Definition: Manufacture of material in which every atom has a specified location relative to other atoms, and in which there are no defects, missing atoms, extra atoms, or incorrect (impurity) atoms

Methods

- Self-assembly
- Positional assembly

Why study APM?

- Motivation: Single-atom and single molecule transistors; quantum devices; quantum computing; superconducting semiconductors; bipolar devices; random access memory; filtration/separation membranes

Questions and Discussion

- What are the critical research gaps?
- What are the opportunities for the future?

Speakers/Panelists

- **William M. Shih, Harvard Medical School and Dana-Farber Cancer Institute**
“DNA Strand Displacement driven Molecular Additive Manufacturing”
- **Martin Edelstein, Covalent Industrial Technologies, LLC**
“Atomically Precise Manufacturing of Membranes for Water Purification and Desalination”

Presentations 20 mins each (15 + 5 Q&A), followed by 15 discussion