

Panel 8: New Concepts in Nanomanufacturing

Moderators:

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Panelists:

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Panelists

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Questions

1. What are the state of the art processes and tools that could be used to make nanomanufacturing sustainable?
2. What are the new concepts that are being explored and what concepts need to be developed to address manufacturing needs
3. What tools need to be developed?
4. How can we assess sustainability and characterize economic, ecological and societal interactions in a nano-enabled product's life cycle?
5. We now have a big library of conjugation chemistry available to link guest molecules to DNA. For proteins, it remains challenging to have a universal method that “just work” to site-specifically link any protein to DNA without losing the protein activity. I wonder whether that is something we could hope for in the near future or we just have to deal with the conjugation case-by-case.
6. DNA nanostructures has been extensively used to direct the assembly of inorganic materials. How realistic (or unrealistic) is it to expect such “hybrid” material to be incorporated into useful, real life devices? What are the major obstacles here?
7. Use of DNA templated biomaterials: How realistic (or unrealistic) to expect such material to be useful for real-life biomedical applications? What are the major obstacles here?

New Concepts in Nanomanufacturing

- Possible audience questions:
- The DNA-based synthetic systems that we built or plan to build to study biology are substantially different from natural systems (e.g. there's no massive, highly negatively charged DNA origami hanging around anywhere in the cell).
- So if the goal is to help understanding how biology works, how would one relate the data from the artificial system to what's really going on in the cell? Is it dangerous to draw conclusions from such in vitro experiments?