

# MSE-Colloquium@NTU

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Lecture Theatre 5, Nanyang Technological University



## Morphology by Design: Large-Scale Solution Coating of Organic Semiconductors Thin Film Electronics and Solar Cells

*Professor Zhenan Bao*

*Stanford University*

*Department of Chemical Engineering*

### About the Talk

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While the chemical structure of organic semiconductors has an obvious effect on their proclivity for charge transport, the ways in which they are processed have a dramatic effect on the performance of plastic electronics devices incorporating them. In some cases, morphological defects and misalignment of crystalline grains can completely obscure the materials' intrinsic charge transport properties. Although some deposition methods, especially vapor-phase ones, can produce single crystals and thus avoid some of these problems, it is desirable to gain a fundamental understanding of how to improve charge transport when using solution-phase deposition techniques. In this talk, I present our understanding and a set of strategies to control thin film morphology towards enhancing their electronic transport properties.

### About the Speaker

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Professor Zhenan Bao is a Professor of Chemical Engineering at Stanford University, and by courtesy a Professor of Chemistry and Professor of Material Science and Engineering. Prior to joining Stanford in 2004, she was a Distinguished Member of Technical Staff in Bell Labs, Lucent Technologies from 1995-2004. She has over 350 refereed publications and over 50 US patents with a Google Scholar H-Index of >110. Professor Zhenan Bao served as a Board Member for the National Academy Board on Chemical Sciences and Technology and Board of Directors for the Materials Research Society (MRS). She is an Associate Editor for Chemical Sciences. She serves/served on the international advisory board for Nature Asia Materials, Journal of American Chemical Society, Advanced Materials, Advanced Functional Materials, Advanced Energy Materials, Advanced Electronic Materials, ACS Nano, Chemistry of Materials, Nanoscale, Chemical Communication, Macromolecules, Organic Electronics, Materials Horizon and Materials Today. Professor Zhenan Bao is a Fellow of ACS, AAAS, MRS, SPIE, ACS PMSE and ACS POLY. Professor Zhenan Bao was the recipient of the AIChE Andreas Acroivos Award for Professional Progress in Chemical Engineering 2014, ACS Polymer Division Carl S. Marvel Creative Polymer Chemistry Award 2013, ACS Author Cope Scholar Award 2011, Royal Society of Chemistry Beilby Medal and Prize 2009, IUPAC Creativity in Applied Polymer Science Prize 2008, American Chemical Society Team Innovation Award 2001, R&D 100 Award 2001. Professor Zhenan Bao was selected by MIT Technology Review magazine in 2003 as one of the top 100 young innovators. She is among the world's top 100 materials scientists by Thomson Reuters. She is a co-founder and on the Board of Directors for C3 Nano, a silicon-valley venture funded start-up commercializing flexible transparent electrodes using nanomaterials.