— Call for Papers —

A Symposium on

Scalable Nanomanufacturing Processes

Sponsored by the ASME Manufacturing Engineering Division's

Nano/Micro/Meso Manufacturing Technical Committee

2017 ASME International Manufacturing Science and Engineering Conference (MSEC)*

June 4-8, 2017

University of Southern California

Technical Focus

Many fabrication techniques have demonstrated the ability to fabricate small quantities of 2D and 3D nanomaterials, nanostructures and nanodevices for device testing purposes. Such nanoscale devices have novel physical, chemical, and biological properties that derive from their nano-to-meso length scales, where unique properties between atomic and bulk behaviors can be obtained. However, nanofabrication at an industrially relevant scale requires production of useful nanomaterials, nanostructures, devices and systems while retaining functional reliability, low cost, high throughput, high yield as well as environmental, health and safety guidelines. Scalable methods for assembly of nano- and micro- systems from nanostructures and nanodevices are needed. This symposium will focus on three aspects of scalable nanomanufacturing

(1) *Innovation of new processes:* Including but not limited to

- Novel processes for large-area continuous manufacturing of nano-scale materials and structures, e.g., vapor-based or solution-based nanomaterial synthesis.
- Creation of functional meso- and micro- scale structureswith nanoscale features: including top-down approaches (e.g. machining and forming) and bottom-up approaches (e.g.printing and roll-to-roll deposition on flat and curved surfaces).
- Self-assembly and hybrid processes e.g., integration of top-down and bottom-up approaches via physical, chemical, biological, thermal or other means.

(2) *Metrology and automation*:Including but not limited to

- Reliable, high-speed, high-resolution, on-line metrology and real-time control for scalable manufacturing of 2D and 3D nanodevices and nanosystems.
- Design principles and architectures for nanoscale measurement and processing.
- New design automation tools for assembling systems of large numbers of heterogeneous nanocomponents.

(3) *Physics of Scalable Nanomanufacturing processes*:Including but not limited to

- Theoretical developments related to nanoscale phenomenon that are relevant to control of product quality, reliability, process yield and process throughput in scalable nanomanufacturing.
- Computational methodologies for predicting the effect of process parameters on product quality and process yield.
- Multiphysical (e.g., mechanical, thermal and optical phenomena) and multiscale (quantum-nano-meso) methods for predicting process performance and process-structure-property relationships in scalable nanomanufacturing.

Additional Symposium Activities:

To highlight advancements in this area, symposium organizers will:

- Organize a special issue in the ASME J. of Micro and Nano-Manufacturing
- Organize a state-of-the-art paper that will be the lead article in the special issue

Paper Submission

Authors are encouraged to submit an abstract and full manuscript for review by **November 03, 2017** via the conference website. Final revised manuscripts must be submitted by **March 08, 2017**. The copyright transfer form must be filled out and the presenting author must pre-register by April 06, 2017 or the paper will be withdrawn from the conference. Authors may also consult www.asme.org/divisions/med/call/ for updates. ***No papers are to be submitted to the organizers; submissions will only be accepted via the conference website at*** www.asmeconferences.org/msec2017/.

Organizers

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* The conference is collocated with NAMRI/SME's 45th North American Manufacturing Research Conference (NAMRC45) and JSME's International Conference on Materials and Processing (ICMP 2017), both of which have a separate call-for-papers. Please note that submissions of the same paper to more than one conference are not permitted.