



American Society for
Precision Engineering



european society for precision
engineering & nanotechnology

Meeting Announcement 2018 Summer Topical Meeting

Advancing Precision in Additive Manufacturing

Lawrence Berkeley National Laboratory
Berkeley, California, USA
July 22-25, 2018

Topics

- **Dimensional accuracy and surface finish in Additive Manufacturing (AM)**
 - State-of-the-art: What level of precision is achievable? ... and what developments are underway? ... or are needed?
 - Functional specifications for form and finish
 - Prediction and modeling of dimensional errors & surface topography
 - Developments in fabricating lattice structures with high strut integrity
 - Diversity in scale length of features: large-scale → micro-nano
- **Design for manufacturing**
 - Design rule & tolerancing for additive manufacturing
 - Topology optimization in the context of AM and achieving precision
 - Novel designs for flexures and kinematic couplings
- **Characterizing the performance of AM machines**
 - In situ process monitoring, e.g. melt zone temperature, powder bed
 - In-process measurement of workpiece shape & topography
 - Using artifacts to assess machine performance; round-robin testing
 - Holistic views of the control system, process feedback, correction
- **Standards**
 - Certifying AM equipment capabilities
 - Industrial demands for ASTM & ISO standards
- **Integrating AM into a holistic manufacturing process**
 - Cost-benefit trade-offs of using AM within a complex process chain
 - Engineered partnerships between AM & secondary finishing
 - Kinematic tooling or pallets for repeatable part handling
- **Metrology**
 - Surface topography measurements on rough as-built surfaces
 - Dimensional metrology of internal features using computed tomography
 - Multi-sensor approaches, data fusion, and machine learning
 - Complex form measurement, registration, and fitting
 - Measurement of 3D lattice strut dimensional accuracy and integrity

Tutorials will be held on Sunday, July 22

Short abstracts due April 23, 2018

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