# — Call for Papers —

A Symposium on

## Advances in Equipment and Process Health Awareness and Intelligence within Manufacturing Operations

Sponsored by the ASME Manufacturing Engineering Division's
*Manufacturing Systems Technical Committee*
2019 ASME International Manufacturing Science and Engineering Conference (MSEC)*
June 10-14, 2019
Erie, Pennsylvania
Hosted by Pennsylvania State University, The Behrend College

## Technical Focus

Manufacturing operations are increasing in complexity as emergent technologies are integrated (e.g., collaborative robotics, additive manufacturing), existing technologies become more accessible and cost-effective (e.g., sensors, visualization technologies), algorithms increase manufacturing awareness (e.g., machine learning, artificial intelligence), and the role of the human operator evolves. This increased complexity touches both hardware and software, and spans the multiple levels of a manufacturing operation from the component level, through the workcell, across the entire factory. This dynamic both breeds new faults and failures while making it more challenging to detect where and when the next issue will arise. Further complicating matters is the role of the human operator is being redefined to promote greater synergy with the technology. To help manufacturers remain efficient and effective through dynamic operations, advanced monitoring, diagnostic, and prognostic technologies are emerging that can assist decision-making at the factory floor level through smarter maintenance and control strategies. Successful monitoring, diagnostic, and prognostic strategies require some understanding of failure modes, detecting precursors to failure, tracking degradation mechanisms, and predicting the remaining useful life of components and systems. This symposium focuses on advances in equipment and process health awareness and intelligence within manufacturing operations; measurement techniques capable of verifying and validating monitoring, diagnostic, and prognostic techniques; and the integration of hardware and software to generate the afore-mentioned techniques. Specific topics of interest include, but are not limited to:

- Monitoring, diagnostic, and prognostic technologies and capabilities
- Performance metrics to assess awareness and intelligence capabilities
- Advanced sensing, sensor fusion, data collection, management, and analysis
- Deep learning, machine learning, and artificial intelligence
- Use cases and test scenarios of monitoring, diagnostic, and prognostic techniques
- Uncertainty quantification, verification, and validation of monitoring, diagnostic, and prognostic techniques
- Human user interface, performance & reliability issues (e.g., impact of operators, human-driven data collection)
- Scheduling and control through equipment – to factory-wide health monitoring
- Preventive, predictive (including condition-monitoring) and risk-based maintenance practices
- Integration of health monitoring technologies across new and legacy systems

## Paper Submission

Authors are encouraged to submit an abstract and full manuscript for review by **November 02, 2018** via the conference website. Final revised manuscripts must be submitted by **March 15, 2019**. The copyright transfer form must be filled out by March 8, 2019, and the presenting author must pre-register by **April 05, 2019;** 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/msec2019/.

## Additional Symposium Activities

To highlight advancements in this technical area, symposium organizers will:
- work to attract high profile international keynote speakers from industry
- organize a special issue in the ASME J. of Manufacturing Science and Engineering

## Organizers:

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[*] The conference is collocated with NAMRI/SME's 47th North American Manufacturing Research Conference (NAMRC47), which will have a separate call-for-papers. Please note that submissions of the same paper to more than one conferences are not permitted.