

Special Issue

In Situ Monitoring of Manufacturing Processes

Message from the Guest Editor

As manufacturing continues to advance toward greater precision, automation, and sustainability, in situ monitoring has become an essential approach for ensuring real-time quality control, process optimization, and predictive maintenance. By integrating advanced sensing technologies, data analytics, and machine learning, in situ monitoring enables early defect detection, enhances process efficiency, and reduces material waste. Recent developments in optical metrology, acoustic sensing, and multi-sensor fusion have further expanded the capabilities of real-time monitoring across various manufacturing domains, including additive manufacturing, machining, and surface finishing. This Special Issue aims to highlight recent innovations and address key challenges in implementing reliable and scalable in situ monitoring solutions. Potential topics include, but are not limited to, the following:

- In situ monitoring;
- Sensing technologies;
- Image or signal processing methods;
- Data analytics;
- Machine learning for predictive analysis;
- Defect detection;
- Optical metrology;
- Surface characterization.

Guest Editor

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About the Journal

Message from the Editor-in-Chief

Machines is an international, peer reviewed journal on machinery and engineering. It publishes research articles, reviews and communications. Our aim is to encourage scientists to publish their experimental and theoretical results in as much detail as possible. There is no restriction on the length of the papers. Full experimental and/or methodical details must be provided. There are, in addition, unique features of this journal: Manuscripts regarding research proposals and research ideas will be particularly welcomed; Electronic files or software regarding the full details of the calculation and experimental procedure - if unable to be published in a normal way can be deposited as supplementary material.

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