# IEEE CASE 2021

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## Special Session Call for Papers
## Analysis of microscopy images for defect detection and structure recognition: from the acquisition to a high-level interpretation

**Goal of the Special Session:** For the improvement of the reliability of electronic devices, failure analysis has a fundamental role and must take its right place in industry 4.0, with the help of artificial intelligence. Failure analysis tools can most of the time be considered microscopes including sensors. So, they will all then benefit from progresses made in the work carried out to eliminate electronic noise from the acquired signal as well as machine learning processing. Machine learning for images and data will also enhance the quality of acquired data and their exploitation. Furthermore, these data driven approaches will achieve increasingly accurate results for failure analysis tasks as they already do across various application domains like object detection, anomaly detection or image segmentation.

For this special session, our major focus will concern image data from different imaging sources often used for failure analysis. This includes (for example) light optical microscopy, X-ray tomography/microscopy, scanning acoustic microscopy or scanning electron microscopy and novel concepts for automated sample-navigation using dedicated focused ion beam (FIB) and precise laser milling tools. Works can deal with the whole framework concerning images, from the acquisition to a high-level semantic analysis, as noise modeling in electronic sensors can help to make appropriate processing of the data. We are also interested by fundamental approaches that are promising to be applied on this kind of data.

Hereafter, a non-exhaustive list of topics:
- noise modeling in sensors,
- denoising methods based in inverse problem or deep learning-based approaches,
- simulation of signals and images for the training of a convolutional neural network for denoising and detection,
- automated pattern recognition of marks or auto-alignment of the ROI,
- end-point-detection for Box-Milling applications for cross-sectional analysis using SEM,
- machine/deep learning methodology for anomaly/default detection and recognition,
- machine/deep learning methodology for quantification of anomalies/defects by means of image segmentation,
- domain adaptation for the analysis of data with no annotation or a few annotations,
- ...

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**Dates and submission procedure:**
February 14, 2021: submission intention with title and short abstract (100 words) <u>to the session chairmen</u>.
March 1st, 2021: Regular & special session paper submission
May 15, 2021: Paper acceptance notification
June 15, 2021: Final paper submission