

---

## Second call for papers

---

### Special Session on

# Emerging Challenges in Fault Detection, Diagnosis and Prognosis in Photovoltaic Applications

## SS3 at ELECTRIMACS 2019

### Special session organizers

- Patrizio Manganiello, Photovoltaic Department, imec/EnergyVille, Thor Park 8320, Genk, Belgium.  
E-mail: [Patrizio.Manganiello@imec.be](mailto:Patrizio.Manganiello@imec.be)
- Ioannis Tsanakas, Photovoltaic Department, imec/EnergyVille, Thor Park 8320, Genk, Belgium.  
E-mail: [ioannis.tsanakas@imec.be](mailto:ioannis.tsanakas@imec.be)
- Martha Lucía Orozco Gutierrez, Industrial Control Research Group (GICI), Universidad del Valle, Street 13 No. 100-00, Cali, Colombia.  
E-mail: [martha.orozco@correounivalle.edu.co](mailto:martha.orozco@correounivalle.edu.co)

### Special session theme

Whenever any components of a photovoltaic (PV) system fail or degrade, the performance of the full system is affected. Issues may arise in terms of system downtime and lower energy production, as well as reduced reliability and safety of the whole PV system. Thus, a correct and timely detection of components faults and degradation is core to maintain proper performance, ensure safety and reduce Operation and Maintenance (O&M) cost of PV systems, enabling also for a lower Levelized Cost of Energy (LCOE). This special session aims to focus on state-of-the-art research and development in the areas of identification, diagnosis and prognosis of PV systems. Studies in better understanding of the root causes of PV systems failures open the way to development of more reliable PV systems, novel diagnosis/prognosis methodologies and optimized maintenance strategies; thus they are appropriated for this call. Different solar technologies, as Si-PV and organic solar cells as well as monofacial and bifacial PV systems, are in the focus of this Special Session, whose main intention is to allow researchers to share experience and discuss advancements included in (but not limited to) the following topics of interest.

### Topics of interest

- Failure mechanisms in PV systems
- On-line and Off-line fault detection of PV systems' components

- Real-time fault detection
- Statistical fault detection
- New methods to diagnose fault types in PV systems
- Identification of PV modules and systems parameters for diagnostic purposes
- Early identification of PV system components' degradation
- Failure forecasting techniques for PV applications
- New techniques for PV system state-of-health monitoring/supervising
- Identification of PV modules mismatch
- Root cause of PV systems failure and reliability of PV systems' components

**IMPORTANT DATES** ([see updates on ELECTRIMACS 2019 website](#))

*The submission system is open!*

<b>Deadline for special session papers (extended)</b>	<b>10<sup>th</sup> December 2018</b> <del>25<sup>th</sup> November 2018</del>
Notification of acceptance	1st March 2019
Final paper submission and registration	1st April 2019

**ELECTRIMACS 2019 PUBLICATIONS** ([see updates on ELECTRIMACS 2019 website](#))

- a **special issue of MATCOM**–Transactions of IMACS Mathematics and Computers in Simulation (Elsevier journal, SCOPUS and WOS indexed);
- a **Springer book in the series *Lecture Notes in Electrical Engineering***. Each paper, appearing as a book chapter, will be also online available (with DOI). The book will be sent for indexing to the major scientific databases, such as Scopus and WoS.