

The Center for Electronics Design & Manufacturing (cEDM) mission: *To support industry by means of **knowledge creation and sharing, scientifically sound methodologies and collaboration throughout the electronic supply chain**, in the development and production of high quality, reliable electronic modules (PBA).*

The Center for Electronics Design & Manufacturing organizes workshops on a regular basis. At these workshops Printed Board Assembly topics are presented followed by a Q&A session. The participation of our cEDM partners allows us to enlighten the topic of the day from different viewpoints in the electronic supply chain.

This workshop is of interest to all involved in or responsible for the design, production, quality, test, supply and system integration of electronics in products for which reliability is an essential property. This workshop will take place on the 22<sup>nd</sup> of May 2015 at imec, Kapeldreef 75, Heverlee, Belgium.

## Physics-of-Failure based Reliability-by-Design

### Abstract:

The Internet-of-Things, electronics everywhere, self-driving cars, body-area-networks monitoring your health, etc. The reliability of these systems is crucial. Therefore, the focus of the Center of Electronics Design & Manufacturing for the coming years will be on electronics reliability supported by the new IWT VIS-traject InProVol “*Intelligente Producten met Voorspelbare Levensduur*”.

The industry is facing major reliability challenges. Increasing electronics complexity means more opportunities to fail and, therefore, intrinsically a lower reliability. Additionally, new materials were introduced in electronics the past decade: lead-free solder, lead-free soldering compatible PCB laminates, new plastic mold compounds for IC's and halogen-free materials to name a few. These material innovations significantly change the way electronics fails under operational stress. As a consequence, experience based extrapolation of accelerated test results– the traditional lifetime prediction approach – can no longer be used.

How can we guarantee reliability if we cannot rely on historical data? The answer lies in a paradigm shift: from experience based extrapolation of accelerated test results to Physics-of-Failure based prediction and Reliability-by-Design. This concept as well as how this can be practically implemented will be explained by Geert Willems.

Bert Dexters of Flanders Make, a cEDM partner, will discuss the role of design for reliability in automotive product development with respect to safety and the need for innovation of the methodology.

Bart Vandeveldel of imec will illustrate the Physics-of-Failure approach with some practical cases.

Finally, Vital Driesen and Tim Gaens of Jabil will give a presentation entitled “Proven activation energy in accelerated lifetime test”.

## Agenda

- 13:30 Doors open
- 14:00 Welcome
- 14:10 Physics-of-Failure based Reliability-by-Design.  
Geert Willems, imec
- 14:40 Design for Reliability in automotive  
Bert Dexters, Flanders Make
- 15:10 *Coffee break*
- 15:30 Physics-of-Failure in practice  
Bart Vandeveld, imec
- 16:00 Proven activation energy in accelerated lifetime test  
Vital Driesen / Tim Gaens, Jabil
- 16:30 Q&A – discussion
- 16:45 *Networking*
- 18:30 *Closure*

## Practical information

cEDM workshop participation:

- Participation fee: **€150**
- Participation is free of charge for cEDM members & cEDM partners.
- Location: imec, Kapeldreef 75, 3001 Heverlee
- Registration via e-mail: [training@imec.be](mailto:training@imec.be)

For more information:

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## Center for Electronics Design & Manufacturing

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