Cristiano Capasso / GLOBALFOUNDRIES

"Statistical implementations for reliability assessment in automotive manufacturing"

Automotive manufacturing requires a higher level of reliability performance especially when dealing with safety systems (e.g. autonomous driving). Wafer fabrication foundries, in collaboration with their customers, own the responsibility to demonstrate that these levels are met according to meaningful statistical procedures.

With this tutorial we will share and discuss pros and cons of data acquisition and data analysis methodologies, together with their impact on turnaround time, cost and accuracy. We will introduce new ideas on how to refine our understanding of the data and how to optimize lifetime extrapolations by leveraging statistical learning from interdisciplinary studies. A sample case will be presented to show the reliability impact of these new ideas on the silicon manufacturing line.

Cristiano Capasso earned his Doctor Degree in Physics from the University of Rome in 1984. He started his career in the USA as a Post Doctoral researcher at the University of Florida and worked in academia for 10 years. His main body of work was on solid state physics, bio-physics, synchrotron radiation, x-ray optics, x-ray microscopy and x-ray lithography. He joined Motorola in 1994, later Freescale, to continue x-ray lithography development. Over the course of 2 decades with Motorola/Freescale, Cristiano led Cu interconnect reliability activity, worked on high-K metal gates integration schemes, transferred CMOS technologies to foundries, and supported reliability and test procedures of 45nm SOI products for networking operations. In 2013 he joined GLOBALFOUNDRIES in Malta, NY where he built the product reliability team and lab dealing with both wafer level and package level reliability. He is currently responsible for Malta's automotive development and for reliability statistical modeling methods.