



Prof. Balázs ILLÉS

Head of the Department

Budapest University of Technology and Economics

Department of Electronics Technology

billes@ett.bme.hu



Material characterization techniques for the microelectronics industry

Abstract: Today, the primary material characterization techniques – like metallographic cross-sectioning, optical and scanning electron microscopy, focused ion beam, X-ray diffraction, and transmission electron microscopy have become an essential tool in the analysis of the different failure mechanisms and in the materials design for microelectronics. The well-known but still existing failures resulting from material incompatibilities (like tin-whisker growth or electrochemical migration) still challenge the engineers in microelectronics. Besides, new material systems are continuously developed – like the different composite materials. The course will demonstrate how the various material characterization techniques are applied for assessing the material originated failures and how they can aid the engineers in the microelectronics industry. The presented course material is a part of the METIS project, which implements a new strategic approach to sectoral cooperation on skills for microelectronics by involving the key players across industry, education & training, and regulatory/certification bodies.

Presenter Bio: Balázs Illés received the M.Sc. degree (in 2005), the Ph.D. degree (in 2009), and the dr. habil. degree (2015) in electrical engineering from Budapest University of Technology and Economics. In 2019 he got the DSc from the Hungarian Academy of Science, and he became the full professor at Budapest University of Technology and Economics. He has been involved in metallurgy, heat and mass transfer, electronics assembling technologies, and reliability of electronic equipment. He has authored / co-authored over 150 articles and two books.