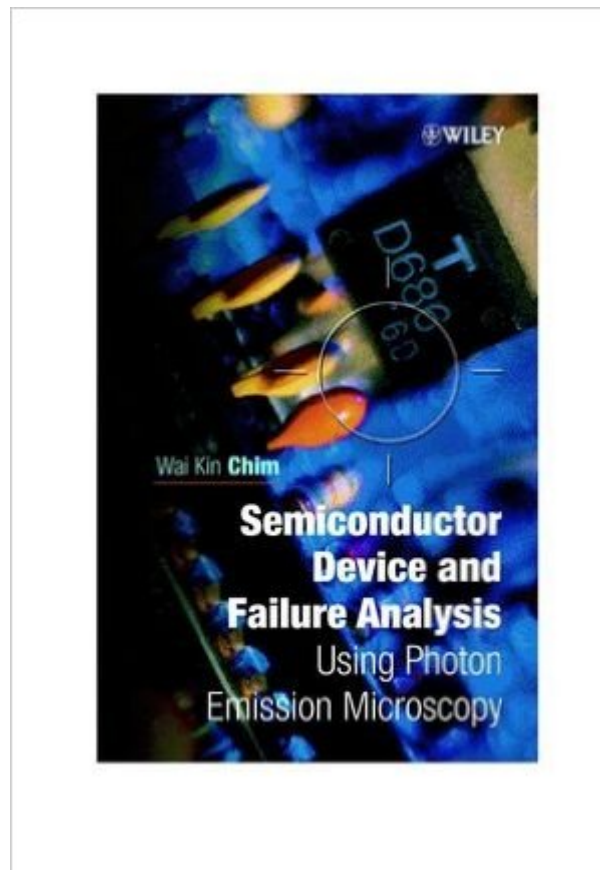


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Semiconductor Device And Failure Analysis : Using Photon Emission Microscopy



Synopsis

The diminishing size and greater complexity of modern semiconductor integrated circuits poses new challenges in fault detection. Photon Emission Microscopy (PEM) is a physical fault localisation technique used for analysing IC failures. Detailing the PEM technique and its application to semiconductor device analysis, this unique reference: * Illustrates the application of the PEM technique in various areas of device reliability, in particular hot-carrier, oxide and ESD reliability. * Presents the principles of design and calibration for a spectroscopic emission microscope system along with coverage of the three main operation modes: frontside, backside and spectroscopic PEM * Provides an analysis of light emission in semiconductors under hot-carrier and high-field impulse stressing in MOS transistors and photon emission from biased MOS capacitors. Not only an essential reference for researchers and students in the field, the numerous practical examples throughout the text also make this an indispensable guide for failure analysis engineers and microelectronics industry professionals.

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