

Mixed Degradation Models for Reliability Inferences

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ABSTRACT

In wear, aging, and fatigue growth processes, continuous degradation models (CDMs) have been applied to assess device reliability for decades. On the other hand, in practical applications, discrete degradation processes (DDPs) have been also observed for years and are discussed again lately for leakage current of thin gate oxides in nano-technology, crack growth of certain metal strength experiments, and fatigue damage of laminates used for industrial specimens. Here a DDP means that the occurrence of degradation event follows a certain discrete mechanism in a specified time interval and each discrete degradation event leads to an increment of damage. Besides the two separate kinds of degradation types, mixed degradation processes (MDPs), which integrate both continuous and discrete degradation patterns, are observed recently in the measurements of electric properties of IC products. This talk will focus on the model building for MDPs and will provide relevant reliability inferences.