

## Fracture and Conductivity of FOF-ACF Film Considering Flexible Bending

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Flex-on-Film (FOF) packages consisting of PI flex with fine-pitch Cu circuits and ITO-coated PET films are bonded using Anisotropic Conductive Film (ACF). The electrical resistance of the packages is then evaluated under sequential static bending cycles. During the bonding process, the conductive particles in the ACF resin deform and fracture under the effects of the compression force and play a key role in determining the initial electrical conductivity of the package. The cyclic compression / tension stress produced in the subsequent bending tests prompts a propagation of the cracks in the conductive particles, and thus degrades the electrical performance of the package. In particular, the electrical resistance increases with an increasing number of bending cycles. Microscopic observations show that the higher electrical resistance is the result of a smaller overall contact area between the conductive ACF particles and the Cu electrode / ITO film due to fatigue crumbling of the particles.

**Keywords:** Flex-On-Film, Anisotropic Conductive Film; Conductive Particle; Microscopic; Static Bending Cycles.

### Biography:

Dr. Chao-Ming Lin received the M.S. degree and Ph.D. degree from the National Cheng Kung University, Taiwan, in 1993 and 1999, respectively, and both in mechanical engineering. He is currently with the Department of Mechanical and Energy Engineering, National Chiayi University, Taiwan, as a Professor with research interests in IC packaging, injection molding processing, electrically conductive adhesive/films, nanotechnology, MEMS, and polymer packaging composites. He had some publications in the areas of electronic packaging, nanotechnology, micro fluidics and polymer processing including more than 60 journal papers, more than 60 conference papers, more than 30 technical reports, and 4 patents.