Averatek
550 Nuttman St.
Santa Clara, CA 95054
Web Site: www.averatek.com

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CONTACT
Averatek
Tara Dunn, VP Marketing
408-496-1010
Email: tara@averatek.com

Averatek to Present "Reliability of Solder Joints on Flexible Aluminum PC Boards" at SMTAI

SANTA CLARA, CA — October 2021 —Averatek is pleased to announce that it will present a paper during the during the SMTA International Conference Nov. 1-4, 2021 at the Minneapolis Convention Center. Divyakant Kadiwala, Nazarali Merchant, Ph.D., and Benny Lam co-authored "Reliability of Solder Joints on Flexible Aluminum PC Boards."

Most surface mount technology has primarily focused on developing products for mounting SMDs onto copper-based rigid or flexible printed circuit boards (Cu-PCBs). Aluminum has several advantages compared to copper: it is less expensive, and has about one-third the density of copper, making Al-PCBs much lighter than Cu-PCBs.

Surface treatment of aluminum includes Electroless Nickel Immersion Gold plating (ENIG), which is extensive wet chemistry, and cost-prohibitive for mass adoption. Conductive adhesives like Anisotropic Conductive Paste (ACP) are an alternative, but result in component-substrate interfaces that are inferior to conventional solders in terms of performance and reliability. An advanced surface treatment technology will be presented to address all of these constraints: a breakthrough pretreatment that allows for soldering to aluminum as easily as to copper - with significant benefits over traditional methods of soldering to aluminum.

Additionally, the presenters will discuss functional aluminum circuits, study of solder-aluminum bond, shear results and SEM/ EDS analysis. They will explain how these mounted assemblies on Al/PET containing various resistors and other components pass the surface insulation resistance test (SIR) as well as temperature cyclic tests between -40° C to 105° C for more than 500 cycles. The solder joints formed are quite strong and in the shear tests, the failure occurs at the Al/PET interface. The solder fillets formed using low temperature solders (138° C melting point) are robust, with minimal voiding as evidenced from X-ray studies and cross-section optical microscopy studies.

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Averatek is a technology innovation company that develops and licenses key chemistries and manufacturing processes for next-generation-electronics: very high-density printed circuit boards, semiconductor packaging, RF and millimeter-wave passive components, simplified assembly to aluminum. For more information: contact our leadership team at info@averatek.com or see www.averatek.com