

**A Dry Film Resist for RDL Panels:** Advanced packaging solutions for 3D, 2.5D, 2.1D and fan-out structures require fine-pitch redistribution layers (RDL) – typically less than 2µm wide – to distribute a large number of input/output connections within a small space. RDLs made from large square panels instead of traditional circular wafers are growing in appeal because they allow for highly efficient use of the panel area, enabling efficient, high-volume production. However, equipment limitations and potential warpage make it challenging to fabricate panel-format RDLs, because of the need to apply photoresist material across a large panel with good thickness uniformity. Liquid resists offer high resolution and are widely used in high-quality wafer manufacturing, but they are difficult to apply to large panels. Dry film resists, meanwhile, offer lower resolution but are less expensive, easier to use and more suitable for large panel applications.

A team from Resonac Corp. will describe a new negative-tone dry film resist with a high 1 μm resolution (aspect ratio 6.0) on wafers, and 1.5 μm resolution (aspect ratio 4.0) on an ABF substrate panel. (ABF substrates are insulating layers designed to allow specific interconnections.) The new material can form copper wiring with a 2 µm pitch on wafers, and a 3 µm pitch on ABF build-up substrates. They say it is promising as a cost-effective, easy-to-use solution for RDL manufacturing, especially for printed circuit board (PCB) manufacturers that have conventionally used dry film resist, because the new material can be applied using the same processes and equipment.

**(Paper 33.2, “*Novel Negative-Tone Dry Film Resist and Process for Fine Pitch Copper Wiring with L/S = 1.5/1.5 µm on Build-up Substrate*,” K. Togasaki et al, Resonac Corp.)**