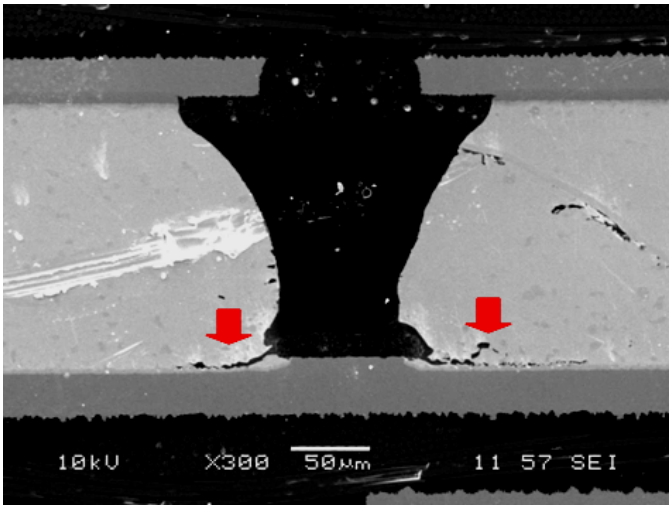

Figure 10. Crack initiaion at 1000 cycles for underfill B, no failures detected.

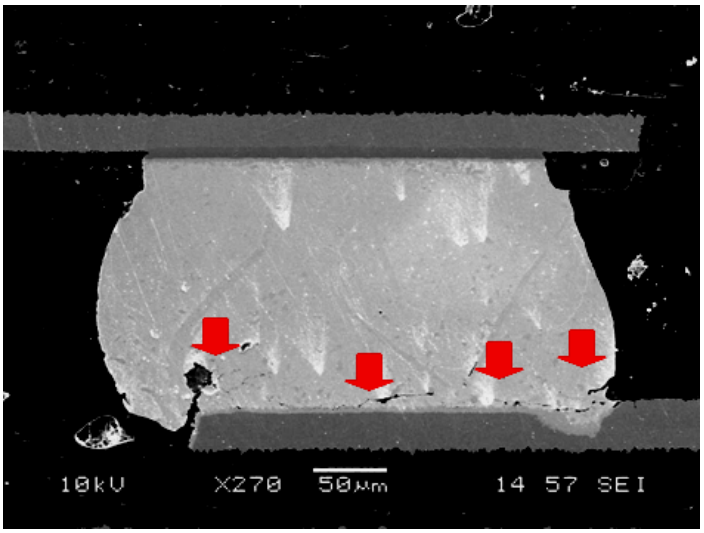

Figure 11. Solder joint cracking on underfill A after thermal cycling.

CONCLUSIONS

With the variety of underfill systems available in the market, choosing the correct system for the reliability required is critical. In this study, two materials who have similar physical properties were evaluated. Both have low T_g and are reworkable, but perform very differently in reliability testing.

While underfill A performs poorly in thermal cycling testing, it outperfoms underfill B in drop testing. Ideally, the material of choice would perform the well in both types of testing.

Future work includes more studies that evaluate drop testing on package-level underfill systems and investigating new systems that strive to provide good thermal cycling performance as well as provide drop test enhcancement.