

Applications of MIP Decapsulation in Device Quality Control and Failure Analysis

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The success of semiconductor device quality control and failure analysis depends on reliable sample preparation. Decapsulation of a semiconductor package requires selective removal of the encapsulant material while preserving the bond wires, re-distribution metal, bond pads, passivation, die, and the original failure sites.

Conventional acid decapsulation and plasma decapsulation have intrinsic limitations on etching selectivity due to the chemistries used. The introduction of corrosion, overetching, and foreign contamination during decapsulation are the major drawbacks of the conventional techniques that hinders accurate quality control and failure analysis. The advancement of package structures like SiP, encapsulants like high Tg mold compound, and new industrial standards has made conventional decapsulation even more difficult.

To solve the above-mentioned limitations of the conventional techniques, we developed the halogen-free Microwave Induced Plasma (MIP) decapsulation instrument. This talk presents the unique applications of the MIP tool in quality control and failure analysis covering topics such as:

- GaAs
- System in Package
- Copper Wire Exposure Including Ball & Stitch Bonds
- EOS Failure Analysis
- Corrosion Failure Analysis
- Contamination Failure Analysis