

EMI Shielding for System in Package using Nozzle-Less Ultrasonic Spray Coating and Silver Particle Free Ink

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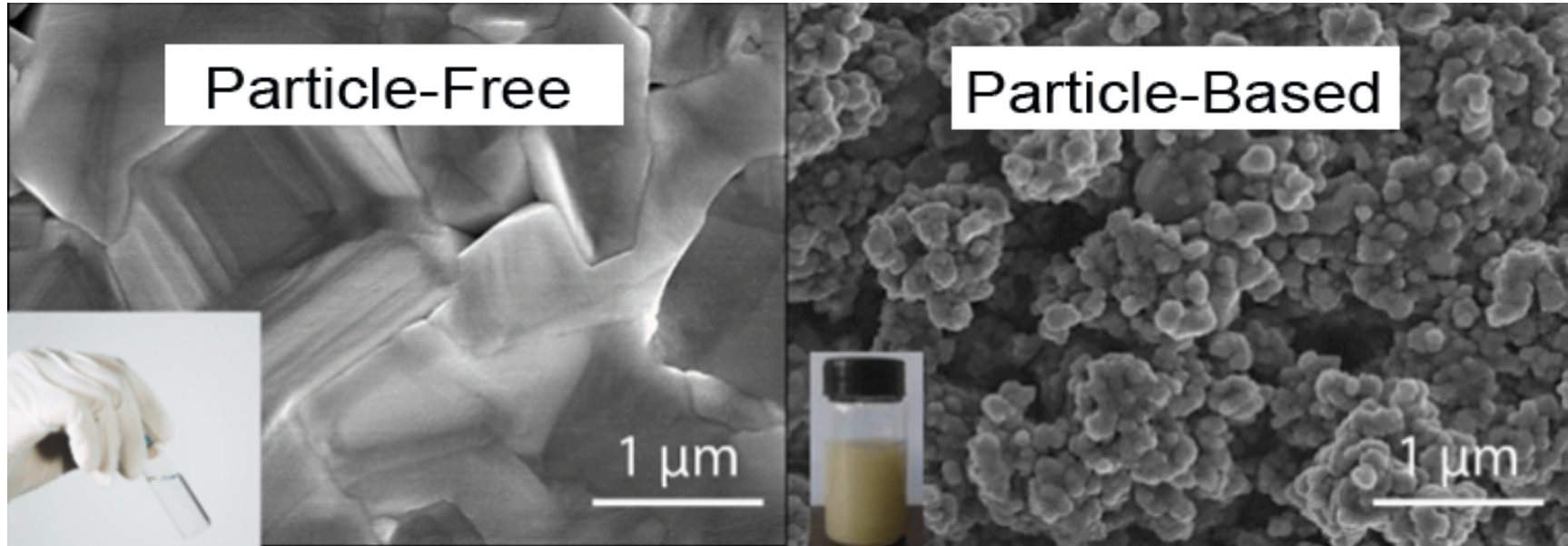
Outline

- ▶ Introduction
- ▶ Participating Companies
- ▶ EMI shielding requirement
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 - Nozzle-less ultrasonic spray technology
 - Micro-line digital dispensing valve
- ▶ EMI shield material
 - Silver particle-free ink
- ▶ Coating process
- ▶ Results
- ▶ Conclusion

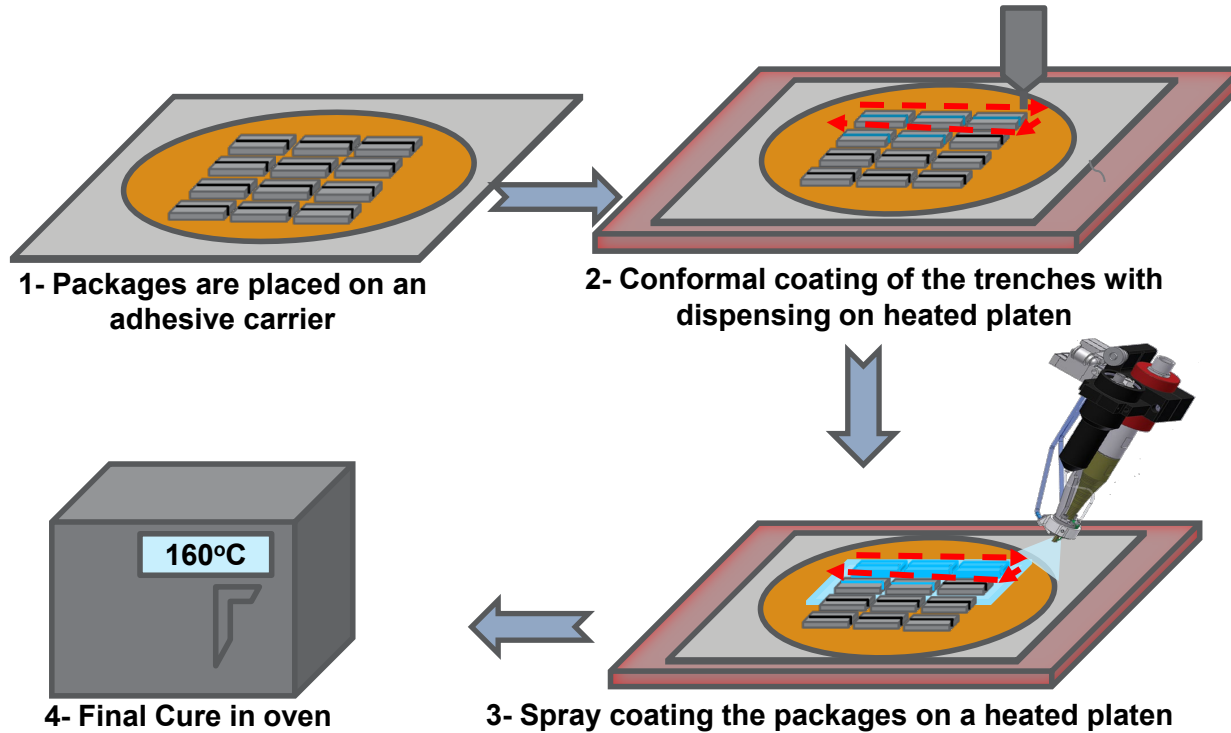
EMI Shielding Requirement

- EMI shielding is increasingly important
 - highly sensitive components more tightly packed in circuit assemblies
 - prevent EMI interference between components
 - minimizing thickness of EMI shield layer critically important
- Traditional methods to apply EMI shield layer
 - sputtering
 - plating
 - layer thickness 3 to 6 μm has proven effective
 - complex application process
 - substantial process cost
- New particle free silver EMI shield coating material
 - recently developed
 - excellent shielding effectiveness at 1 to 3 μm
 - low material cost
 - applied by much simpler and cost effective spray process
- Coating Application Process
 - “nozzle-less” ultrasonic spray technology
 - precision coating system platform
 - same EMI shield performance as traditional methods
 - reduces process cost by up to 60%

Microstructure of Particle Free Ink Versus Particle-based Silver Ink



Spray Coating Process



Film Thickness and Coverage on EMC Chip

- ▶ Side coat coverage is slightly less than top coat:
 - 3 μm for top
 - 2.8 μm for side

Side



Top

