Stanna-CAT®

Autocatalytic tin deposition

Electronics

Final finishing technology

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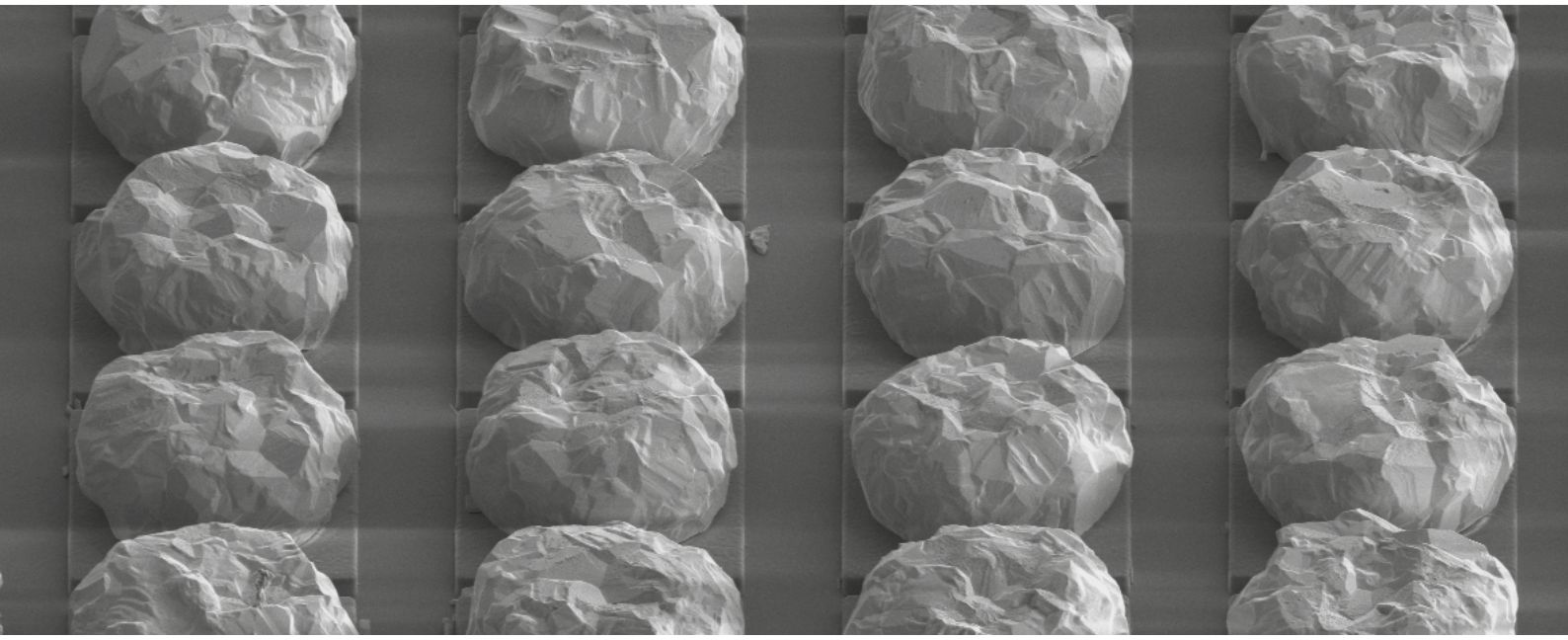

A new solution for thick tin plating

3-4

µm/h plating rate

Autocatalytic plating with Stanna-CAT®

With Stanna-CAT® Atotech now offers an autocatalytic tin process, which allows the tin deposition on copper or other metal substrates without any limitation on the tin thickness. The plating rate is stable over time and the deposit thickness increases continuously related to dwelling time. Due to its autocatalytic plating characteristics, the plating is independent of the metal substrate and tin deposition is possible on different metals such as copper, nickel, gold, or silver. With these unique properties, the process opens new opportunities for tin plating in new applications like µ-LED, IC substrates, or solder depot plating. The tin layer is even and homogeneous in the crystal structure and can be deposited with a layer roughness of below 150 nm Ra.

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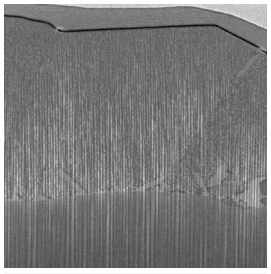
New application fields by autocatalytic plating



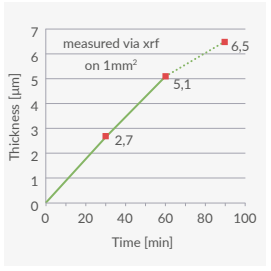


Figure 1-3:
FIB cross section of Sn deposit
Tin thickness vs. time
regeneration concept.

New applications for tin finishes

The autocatalytic nature of Stanna-CAT® allows entering new fields of application for tin as a final finish. At the same time, it offers new opportunities for limitations in current tin applications. The autocatalytic deposition of tin allows the plating of thick tin layers on different metal substrates. Although the process is autocatalytic, the specific bath formulation allows a controlled deposition on fine structures without any risk for excessive plating.

Chemistry waste savings by regeneration

Specifically for this new process, a regeneration unit has been designed to reduce the chemistry consumption and to regenerate the reducing agent in the working bath solution. By use of that device, the plating bath can be operated in cycle while the amount of chemical waste is reduced significantly.

Process flow

- Acid cleaner: 4 – 6 min @ 35 – 50 °C
- Etch cleaner: 0.5 – 2 min @ 25 – 40 °C
- Optional predip: 4 – 8 min @ 60 – 80 °C
- Tin predip: 1 min @ RT
- Tin bath: Dwell time depending on target thickness, temperature 65 – 75 °C