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Uniform Through-Mask Gold Plating Using the Solstice GoldPro Reactor

The relatively slow diffusion rate of the gold complex ion makes high-speed plating in a gold sulfite bath sensitive to localized flow vectors. Thus, a sub-optimal electrolyte flow profile results in a non-flat plated feature shape. To overcome this issue, most immersion and fountain plating systems have to use very low plating rates

However, the proprietary Solstice® GoldPro™ reactor design is able to generate randomized fluid vectors at the diffusion layer of the wafer. This ensures that the diffusion layer is as thin as practical and also that fluid motion remains directionless.This results in a flat plated feature profile without sacrificing plating rate.

Example Applications

- Bondpad for microLEDs
- VCSEL p- and n-contact plating
- Gold bump
- BAW and SAW filters
- Air-bridge
- And more…

Competitive System **Solstice GoldPro**
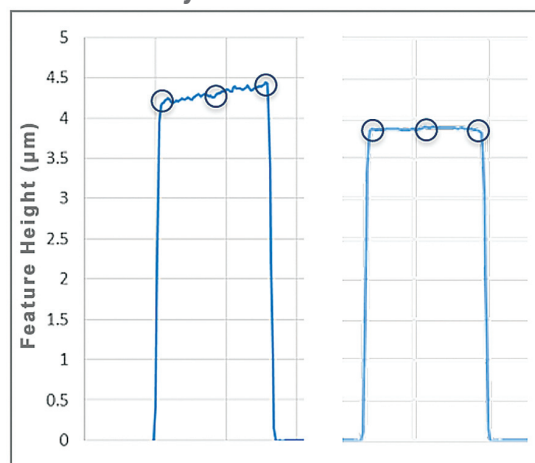
Performance comparison of GoldPro and competitive system on through-mask gold plating

Features

- Randomized fluid vectoring
- Adjustable diffuser
- Dissolved oxygen control
- Dry-contact low-maintenance plating rotor
- Customized seal reach
- Continuously filtered chemistry loop
- Optional carbon filtration
- Levitronix pump with LeviFlow™

Benefits

- High plating rate and high uniformity
- Extremely uniform field profile
- Maximized bath life
- Seal reach aligns to existing integration
- Continuously cleaner chemistry
- Precise, consistent flow rate control

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Within-Feature Uniformity (WIF) on SAW Filter

Within Feature Uniformity: 0.60% (stdev/mean)
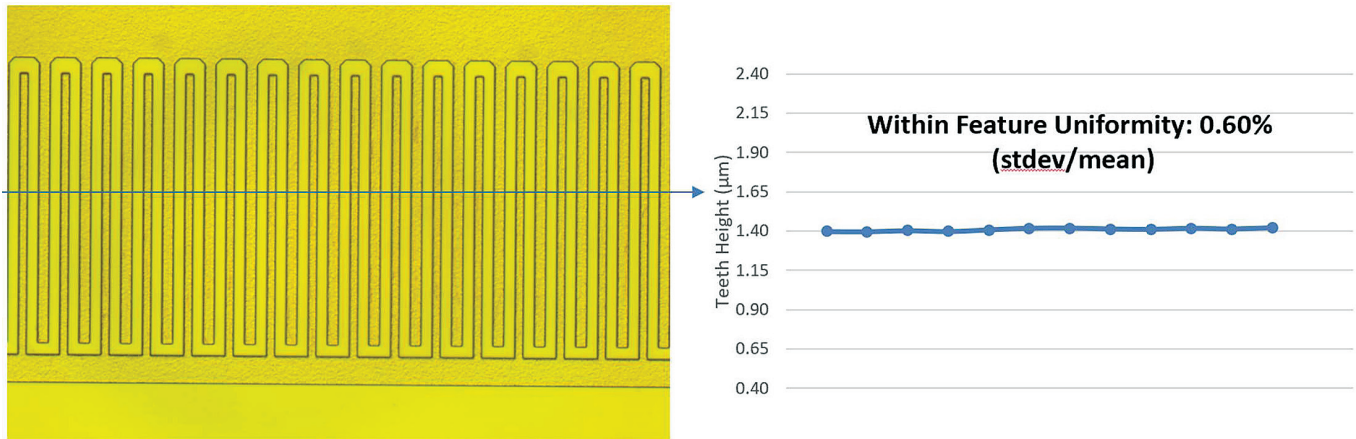
Example of Solstice's WIF uniformity on through-mask gold plating of a Surface Acoustic Wave (SAW) filter

Technical Data

■ Wafer Sizes	75-200 mm	Configurable to non-standard sizes, e.g., 160 mm
■ Wafer Thickness	150µm to >6mm	
■ Wafer Materials	Silicon	
	GaAs	
	GaN on Si, GaN on Sapphire	
	Sapphire	
	Transparent substrates and more	
■ Flow Rate	30-60 lpm	Dependent on wafer size
■ Plating Rate	Up to 1 µm/min	Dependent on chemistry
■ Within-Wafer Uniformity	<3% (range / 2*mean)	
■ Within-Feature Uniformity	<3% [(max-min) / (max+min)]	
■ Wafer-to-Wafer Uniformity	<1% (mean-to-mean)	
■ Roughness	<2kÅ	

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