

Template Stripped Gold Chips – Silicon Wafer

I. Introduction

Template Stripped Gold Chips – Silicon Wafer provide an extremely smooth and clean gold surface for a variety of research needs, including AFM and SEM applications, biosensor development, and SAM studies. Immediately before use, simply “strip” a chip (1cm x 1cm) from a gold-coated, prime grade silicon wafer template. Unlike epitaxially grown or flame annealed atomically flat Au (111) terraces that are smooth over minute surface areas ($< 2 \mu\text{m}^2$), Template Stripped Gold Chips Silicon Wafer have an ultraflat, thin film of gold that covers the entire surface area of the chip.



Template Stripped Gold Chips Features & Benefits:

- **Consistent Topography** - Gold on chips remains ultraflat until stripped from the silicon wafer template.
- **Uncontaminated Surface** - Gold on chips is protected from atmospheric hydrocarbons until stripped from the template, and when used immediately upon stripping, provides a pristine surface uncontaminated by organics.
- **Ready to Use** - Chips do not require cleaning prior to use, thus eliminating the need for caustic piranha cleaning solution or expensive cleaning equipment.
- **Convenient** - Multiple chips per template make it easy to prepare fresh, clean, and ultraflat chips just seconds before your next experiment.

Immediately upon stripping, Template Stripped Gold Chips – Silicon Wafer provide an RMS roughness approaching atomic flatness as measured over a $1 \mu\text{m}^2$ area with a water static contact angle substantially similar to that of a freshly deposited, high-energy gold surface. Template Stripped Gold Chips – Silicon Wafer are offered in a gold film thickness of 1000 Å. Customers can request a Certificate of Analysis for lot-specific RMS values when ordering.

II. Kit Contents

The Template Stripped Gold Chips – Silicon Wafer product (AU.1000.SWTSG) contains twenty 1 cm^2 aluminosilicate glass chips adhered to a 1000 Å gold-coated prime grade silicon wafer template.

III. Precautions

Strip the chips from the gold-coated silicon wafer template no more than 5 minutes before use to minimize atmospheric contamination.

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IV. Protocol – Removal of Template Stripped Gold Chips

1. Place silicon wafer template on work surface so that chips are accessible.
2. Wearing gloves, firmly secure the distal edge of one chip by pressing downward on it with your finger.
3. Using a flat pair of sharp tweezers, gently push the tweezers forward while prying the proximal edge of the chip upward from the silicon wafer template.

Note: Do not rub the surface of the chip across the gold-coated silicon wafer template when removing the chip, since this will smear the gold layer on the chip’s surface.

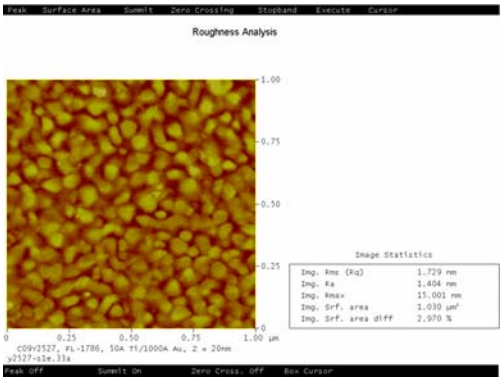
4. The Template Stripped Gold Chip is now ready for use.

Note: The adhesive layer on the chip is compatible with most common solvents used for attaching SAMs to the gold surface, such as ethanol and methanol. Do not expose Template Stripped Chips to piranha solution or any other highly acidic cleaning solution.

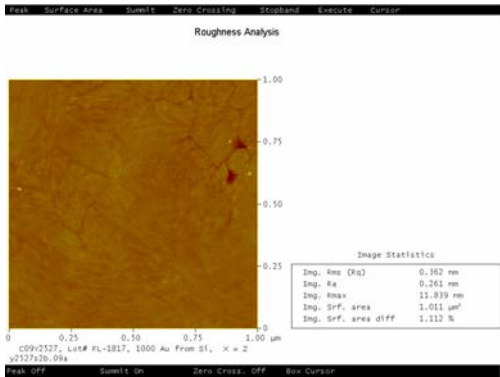
5. Return the silicon wafer template and remaining chips to the shipping container and store under ambient conditions.

V. AFM Characterization

Representative data of RMS roughness over 1 μm^2 area on gold surfaces:



1 μm^2 AFM scan of As-Deposited Gold on Silicon Wafer
RMS roughness = 17.3Å



1 μm^2 AFM scan of Template Stripped Gold Chips – Silicon Wafer
RMS roughness = 3.6Å

VI. Goniometer Characterization

Representative data of water static contact angle on gold surfaces:

Surface Condition	Static Contact Angle
As-Deposited Gold (fresh)	25 - 40°
As-Deposited Gold (after exposure to atmosphere for 5 hours)	75 - 90°
Template Stripped Gold Chip – Silicon Wafer (stripped prior to reading)	25 - 40°
<i>Note: All measurements carried out at ambient temperature.</i>	