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Surface Roughness and Morphology of Au film prepared by PVD75 e-beam evaporator

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Keywords
Surface Roughness, Morphology, Au film, PVD75 e-beam evaporator

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Surface Roughness and Morphology of Au film prepared by PVD75 e-beam evaporator (Graduate Student Fellow Program)

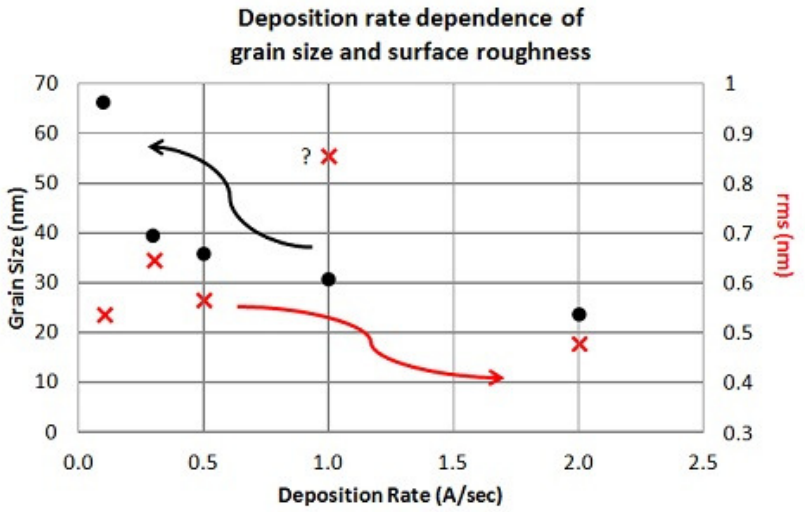
Prepared by Zisong Nie (10/30/2014)

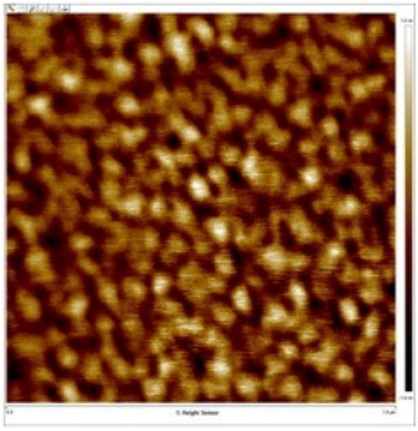
Tooling factor: 31-33 %

Surface Roughness

- Thisckness measurement: P7 2D stylus profiler
- Atomic Force Microscopy
  - Measured area (Field of View): 1 μm x 1 μm
  - PV (Peak-to-Valley): The distance between the highest and lowest points within the sample.
  - rms: The root-mean square deviation from the center line. The center line is defined as the best fit surface selected with the Remove control.
  - Ra: The average deviation from the center line.
  - The grain sizes were estimated using AFM phase images.

Deposition rate (A/s)/(nm/min)	Thickness of Au (nm)	Ra (nm)	rms (nm)	PV (nm)	Grain size (nm)
0.1 (0.6)	62.6	0.434	0.54	4.05	66.2
0.3 (1.8)	60.8	0.518	0.648	5.68	39.42
0.5 (3.0)	54.4	0.457	0.569	4.48	35.72
1.0 (6.0)	56.9	0.687	0.859	6.97	30.61
2.0 (12.0)	59.7	0.374	0.482	6.62	23.57





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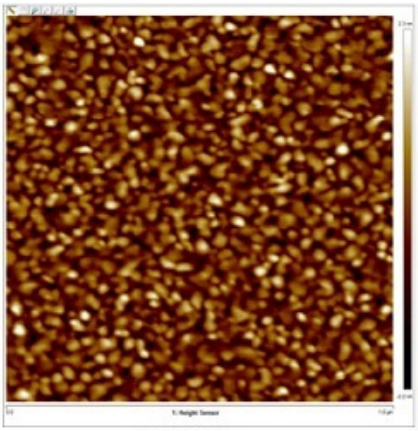

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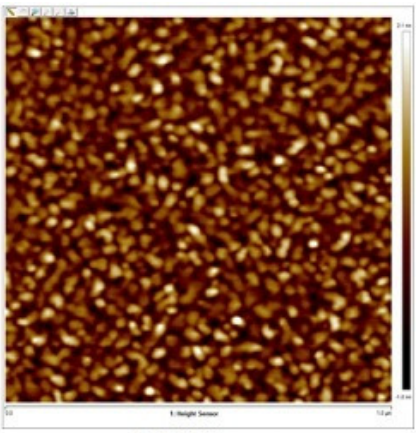

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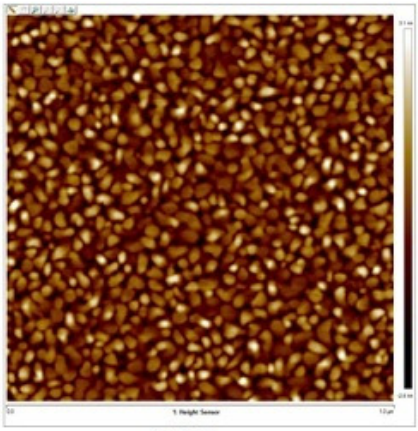

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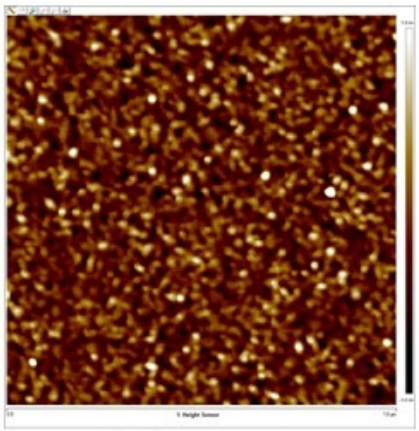

2 A/sec

AFM height images (1 μm x 1 μm) of ~60 nm thick Au films on 5 nm thick Ti film on Si wafer