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Deposition Rate and Surface Roughness of Ti films prepared by Explorer14 Magnetron Sputterer

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Keywords

Deposition Rate, Surface Roughness, Ti, Explorer14

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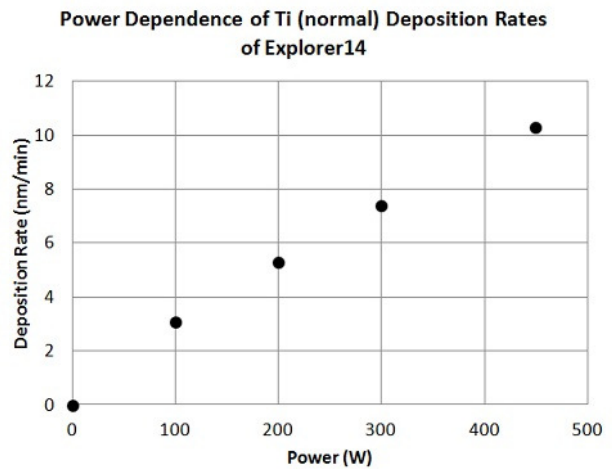
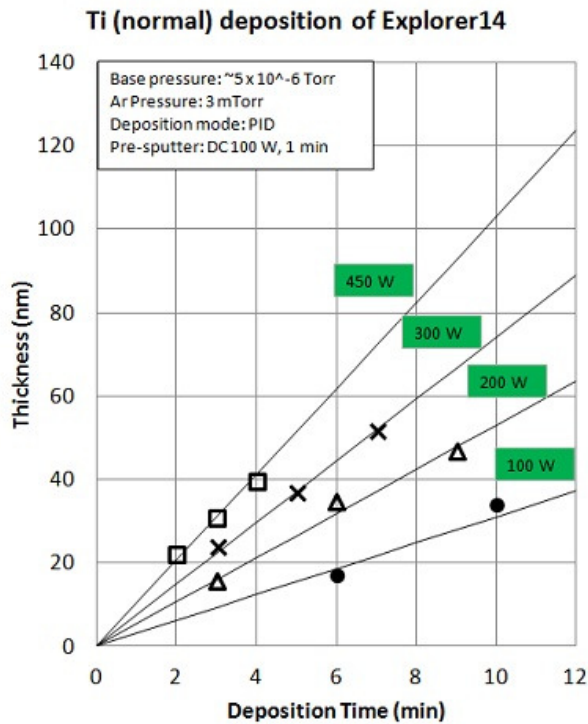
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Deposition Rate and Surface Roughness of Ti films prepared by Explorer14 Magnetron Sputterer (Graduate Student Fellow Program)

prepared by Zisong Nie (8/21/2014)

- Thickness measurement: P7 stylus profiler

Power (W)	Deposition Rate (nm/min)
100	3.1
200	5.3
300	7.4
450	10.3



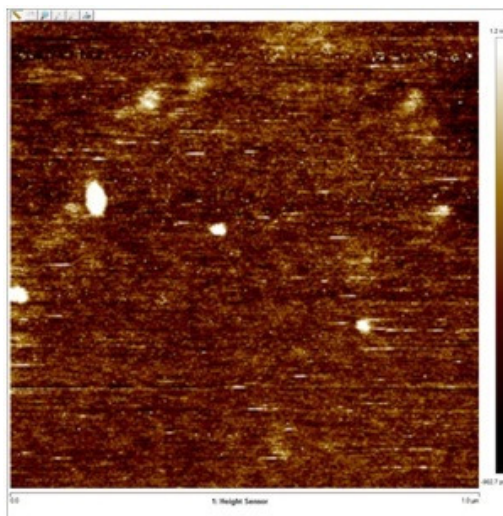
Surface roughness

prepared by Zisong Nie (8/14/2014)

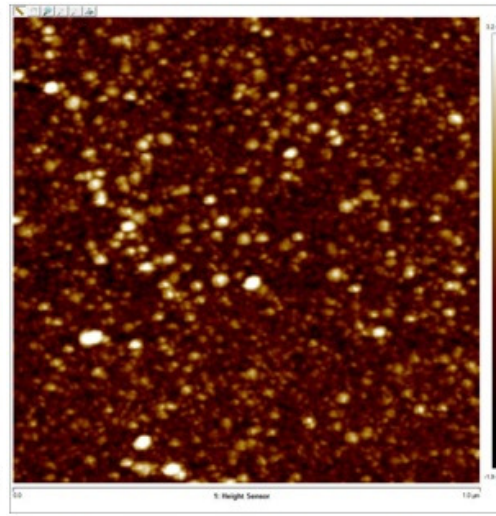
- Roughness measurement: Zygo 3D optical profiler and Atomic Force Microscopy
- Measured area (Field of View): Zygo, 70 μm x 50 μm ; AFM, 1 μm x 1 μm
- PV (Peak-to-Valley): The distance between the highest and lowest points within the sample.
- rms: The root-mean square deviation from the center line. The center line is defined as the best fit surface selected with the Remove control.
- Ra: The average deviation from the center line.

Surface roughness

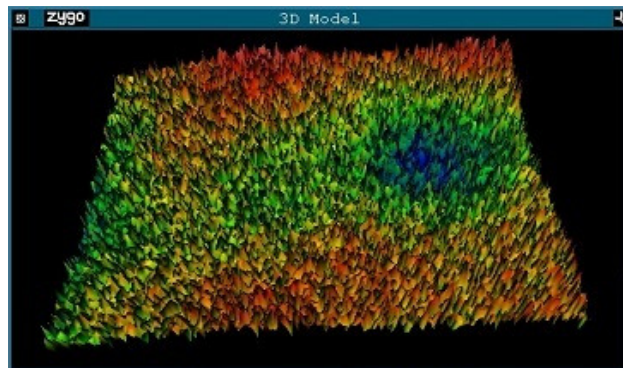
	PV (nm)	rms (nm)	Ra (nm)
Blank Si wafer			
Zygo (70 μm x 50 μm)	4.618	0.514	0.413
AFM (1 μm x 1 μm)	6.240	0.285	0.198
40 nm Ti film on Si wafer			
Zygo (70 μm x 50 μm)	5.253	0.627	0.501
AFM (1 μm x 1 μm)	7.140	0.693	0.511



AFM image: Blank Si wafer



AFM image: 40 nm thick Ti film (450 W deposition)



Zygo image: 40 nm thick Ti film (450 W deposition)