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# Film stress of Ti films prepared by Explorer 14 Magnetron Sputterer

Swapil Paliwal  
swapil@seas.upenn.edu

Zisong Nie  
zisong@seas.upenn.edu

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## **Keywords**

Film stress, Ti, Explorer14

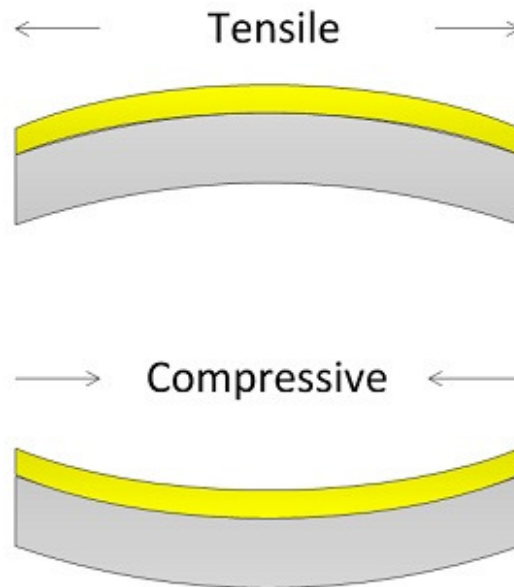
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# Film stress of Ti films prepared by Explorer14 Magnetron Sputterer (Graduate Student Fellow Program)

- Film stress measurement: P7 3D stylus profiler



Film Stress Type

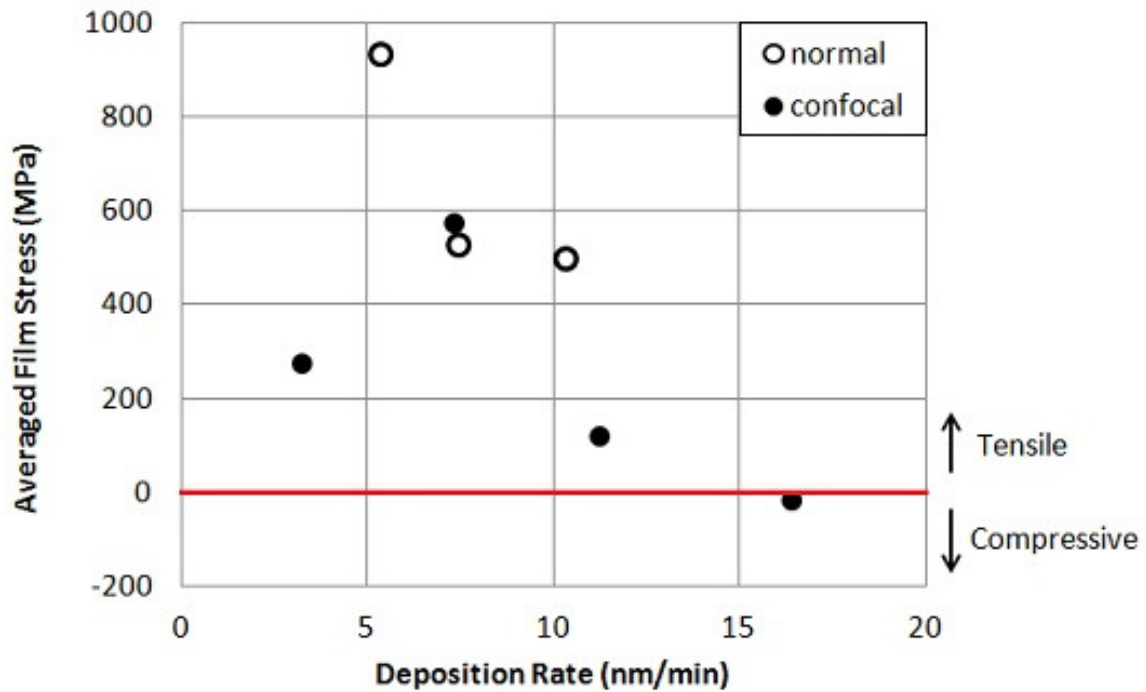
## Thin Film

prepared by Zisong Nie and Swapil Paliwal (8/21/2014)

- The film stress of thin film was not stable.

Deposition Rate (nm/min)	Thickness (nm)	Film Stress (MPa)	
		normal	confocal
3.2	70		278
5.3	49	935	
7.3	80		575
7.4	47	528	
10.3	44	500	
11.2	92		122
16.4	90		-16.45

Deposition Rate Dependence of Ti Film Stress



## Thick Film

prepared by Zisong Nie (9/27/2014)

- The film stress of thick film was stable.
- Film uniformity: 9.6 %
- **Note:** It turns out that the film stress of 300 nm thick Ti is Tensile.

Power and Deposition Rate	Thickness (nm)	Film stress (MPa)
100W, 3.1 nm/min	320	323.7
200W, 5.3 nm/min	326	268.6
300W, 7.4 nm/min	319	297.2
450W, 10.3 nm/min	355	263.9

### Film Stress of ~300 nm Ti film prepared by Explorer14

