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## Statistical Process Control of PECVD

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## Statistical Process Control of PECVD

### Keywords

Statistical Process Control, PECVD

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# Statistical Process Control of PECVD

Hiromichi Yamamoto (5/6/2015)

## Deposition Rate

### 1. SiO<sub>2</sub>

- Default Recipe

T = 350 °C

10%SiH<sub>4</sub>/He = 50 sccm

N<sub>2</sub>O = 710 sccm

N<sub>2</sub> = 90 sccm

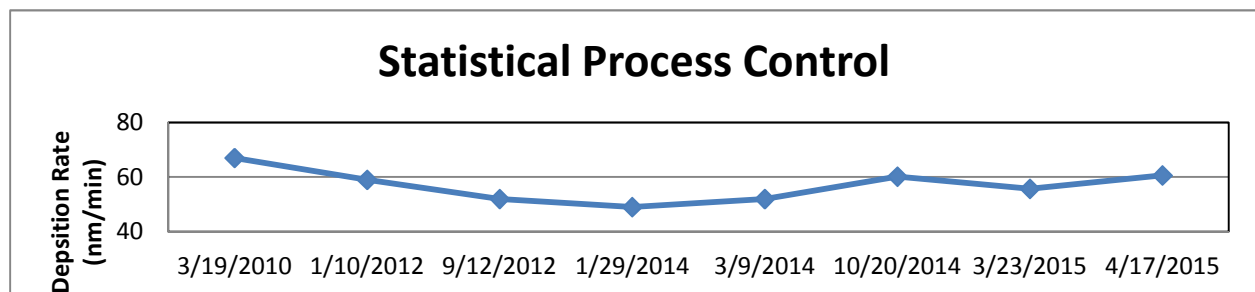
Pressure = 1,000 mTorr

RF = 20 W

Refractive index = 1.462 at 632.8 nm (updated on 9/12/2012)

- Literature value = 1.457 at 632.8 nm

Date	Deposition Rate (nm/min)
3/19/2010	67
1/10/2012	59
9/12/2012	52
1/29/2014	49
3/9/2014	52
10/20/2014	60
3/23/2015	56
4/17/2015	61



## 2. Si<sub>3</sub>N<sub>4</sub>

- Default Recipe

T = 350 °C

10%SiH<sub>4</sub>/He = 170 sccm

NH<sub>3</sub> = 20 sccm

N<sub>2</sub> = 820 sccm

Pressure = 1,000 mTorr

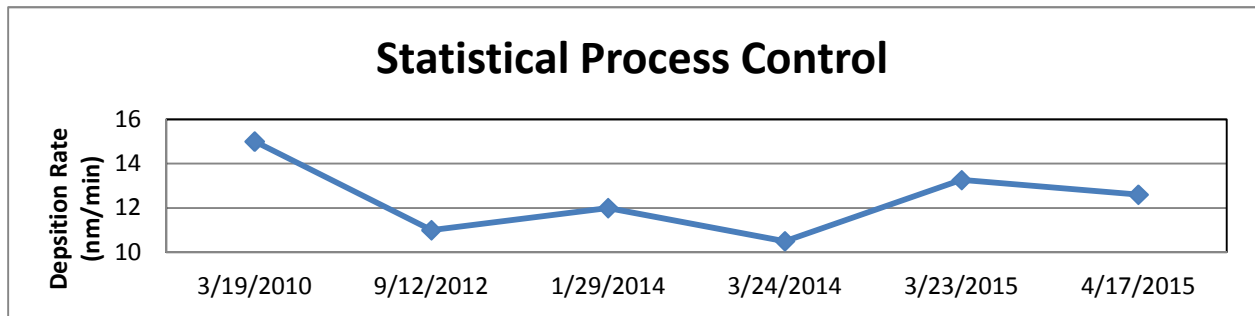
RF = 20 W (13 sec)

LF = 20 W (7 sec)

Refractive index = 1.981 at 632.8 nm (updated on 9/12/2012)

- Literature value = 2.023 at 632.8 nm

Date	Deposition Rate (nm/min)
3/19/2010	15
9/12/2012	11
1/29/2014	12
3/24/2014	11
3/23/2015	13
4/17/2015	13



### 3. a-Si

- Default Recipe

T = 250 °C

10%SiH<sub>4</sub>/He = 500 sccm

Pressure = 1,000 mTorr

RF = 8 W

Refractive index = 3.843 (updated on 9/21/2012)

- Literature value = 4.500 at 632.8 nm

Date	Deposition Rate (nm/min)
3/19/2010	17
9/12/2012	5.7
3/24/2014	5.3
3/23/2015	6.9
4/17/2015	6.5

