

## Unit 4 - Week 3

### Course outline

How does an NPTEL online course work?

Week 1

Week 2

Week 3

• Deposition and Surface Modification Methods

• Physical Vapour Deposition (PVD)

○ Chemical Vapour Deposition (CVD)

○ Advanced Surface Modification Practices

• Advantages of Deposition for Surface Modification

○ Quiz : Assignment 3

• Solution for Assignment 3

Week 4

Week 5

Week 6

Week 7

Week 8

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## Assignment 3

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

**Due on 2020-02-19, 23:59 IST.**

All are compulsory

1) Which of the following processes provides springs, standing rods or balls type of microstructures? **1 point**

- Vacuum polymer deposition (VPD)  
 Atomic layer deposition (ALD)  
 High-power pulsed magnetron sputtering (HPPMS or HIPIMS)  
 Glancing angle deposition (GLAD)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Glancing angle deposition (GLAD)

2) Which of the following process do not favors evaporation of dielectric materials? **1 point**

- Direct resistive heating  
 Indirect resistive heating  
 Inductive heating  
 All of these

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
All of these

3) Which of the following reactive gas is not introduced into the chamber while the metal is evaporated in reactive electron beam evaporation process? **1 point**

- Helium  
 Nitrogen  
 Oxygen  
 Hydrocarbon

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Helium

4) Which of the following is a type of ion-plating process? **1 point**

- Dielectric based ion plating  
 Plasma based ion plating  
 Both (a) and (b)  
 None of these

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Plasma based ion plating

5) In case of CVD process, more selective area deposition occurs due to: **1 point**

- Higher activation energy for reaction with foreign substances  
 Large number of compositional gradients which incurs fast reactions  
 Increased porosity of the substrate allowing infiltration of precursor  
 All of these

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Higher activation energy for reaction with foreign substances

6) What is the full form of CVI process? **1 point**

- Chemical vapor infiltration  
 Charge variable infiltration  
 Counterflow vapor infiltration  
 None of these

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Chemical vapor infiltration

7) In vacuum polymer deposition process, the thickness of the polymer layer depends on which parameter. **1 point**

- Substrate temperature  
 Monomer pressure  
 Both (a) & (b)  
 Independent of substrate temperature as well as monomer pressure

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Both (a) & (b)

8) In vacuum polymer deposition technique, the liquid film is cross-linked into a solid layer by: **1 point**

- UV radiation  
 Spray deposition  
 Both (a) and (b)  
 None of these

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
UV radiation

9) In case of super-hard nanocomposite coatings, Vickers's hardness should be: **1 point**

- 10-400 GPa  
 > 20 GPa  
 40-80 GPa  
 > 80 GPa

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
40-80 GPa

10) Which of the following methods can be used for making hydroxyapatite nanostructured coatings? **1 point**

- Plasma aerosol  
 Chemical deposition  
 Electrophoresis  
 All of these

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
All of these