



Försättsblad Prov Original

Kurskod	Provkod	Tentamensdatum
F Y 0 2 1 A	T 2 0 0	2 0 1 9 - 0 3 - 2 0
Kursnamn	Fysik AV, Introduktion till nanoteknik	
Provnamn	Skriftlig examen	
Ort	Sundsvall	
Termin		
Ämne		

Introduction to Nanotechnology (FY021A) 190320

Students are not allowed to bring any materials except dictionary.

1. Explain the following terms (40p)

Nanotechnology (5p)

Nano-bio and Bio-nano interface (5P)

Nanomaterials (5P)

Nanomedicine (5p)

Nanodevices (5p)

Nanosystems (5p)

Exfoliation (5p)

Nanometrology (5p)

2. List at least 5 methods for producing nanomaterials and explain the processes shortly (5p).

3. What kinds of technology/methods can be used to measure the size of a nanomaterial? (5p)

4. What are the risks of nanomaterials? (5p)

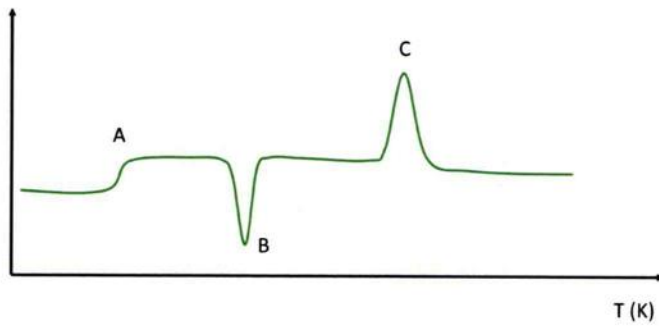
5. Through what ways can nanomaterials gain access to human body? (5p)

6. How nanoparticles with different sizes enter cells? (5P)

7. For synthesizing nanomaterials using Sol-Gel method, what kinds of parameters can influence the size and shape of the nanomaterials? (10p)

8. During heating of a polymer in a differential scanning calorimetry run, the differential heat flow is measured and drawn in a diagram, see below. Please explain briefly what happens in the polymeric material during the heating process shown in the diagram. (5p)

Differential
Heat Flow



9. You are an engineer in a factory and have got a task to develop a new product that is a kind of nanomaterial with size around 50 nm.
Please write a brief plan on how would you accomplish the task (20p).

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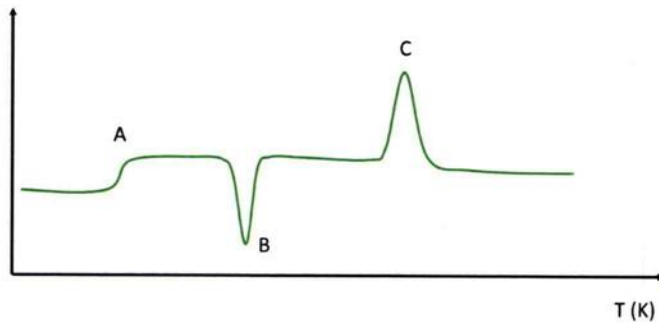
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