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Contribution ID: 9

Type: **not specified**

Nanomaterials: Introduction

Friday, 19 April 2024 14:30 (1h 30m)

Syllabus outline:

Nanotechnology and nanomaterials.
Classifications of nanomaterials, their properties.
Historical overview of nanomaterials.
Reasons for special properties of nanoscale materials.
Classical and quantum size effects.
Basic concepts of quantum physics.
The energy of an electron in an atom.
Harmonic oscillator: transition from classical to quantum theory.
Wave-particle duality. Uncertainty principle.
Condensed matter physics. Electrons in crystals.
Quantum dots and their applications.
Applications of nanomaterials.

Objective competences:

Overview of nanomaterials (history and properties).
Modern applications of nanomaterials.
Basic concepts of quantum physics.

Intended learning outcomes:

Participants will gain general knowledge about nanomaterials and their properties.
Participants will be able to identify different types of nanomaterials.
Participants will distinguish between classical and quantum size effects.
Participants will understand the basic concept of quantum mechanics.

Literature

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