

# PhD Course: Simulation and characterization at the Nanoscale

Lecturers:

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This PhD course will focus on various characteristic properties of nanostructures. Emphasis will be on computer-based simulation of such properties using linear algebraic methods and matrix routines. The experimental part will discuss various methods of characterizing nanoscale structures.

Lecture plan:

1. Growth of thin films (KP)
2. Nanowires and nanocrystals (KP)
3. Optical and photoelectron spectroscopy on nanostructures (KP)
4. Nanoparticle optics in the electrostatic limit (TGP)
5. Plasmon resonances in nanoparticles with cylindrical symmetry (TGP)
6. Numerical techniques for general geometries (TGP)
7. Scattering, absorption and energy balance in optics (TGP)
8. Complex function analysis (HC)
9. Quantum transport (HC)
10. Scattering in mesoscopic systems (HC)
11. Finite element method 1 (TS)
12. Finite element method 2 (TS)
13. Finite element method 3 (TS)

Lecture Plan:

Uge 9 (1/3-5/3):	Mandag	Tirsdag	Onsdag	Torsdag	Fredag
Formiddag			TS		TGP
Eftermiddag	TS		TS		TGP
Uge 10 (8/3-12/3):	Mandag	Tirsdag	Onsdag	Torsdag	Fredag
Formiddag		TGP		HC	
Eftermiddag		TGP		HC	
Uge 11 (15/3-19/3):	Mandag	Tirsdag	Onsdag	Torsdag	Fredag
Formiddag		KP			
Eftermiddag	HC	KP			

Place: Room 5.227, Skjernvej 4A, Aalborg University.