

Assignments for the roving spectrometer.

The book referred to here is “Porous Silicon in Practice” 2012, Sailor M.J., Wiley-VCH (Weinheim)

Objective:

These experiments all use the “roving spectrometer” an Ocean Optics CCD spectrometer, optics, computer, and a set of samples all contained in a backpack for easy transport. The detailed description of how to set up the spectrometer is in the group Google Drive “Sailorgroup Internal Use Drive > SOPs > Ocean Optics Spectrometers > Optical Reflectance Spectrometer Setup Guide.pdf” The kit contains four samples:

Single layer—a Fabry Perot layer

Double layer—a stack of two Fabry Perot layers of different optical thickness

Rugate filter—a photonic crystal made of porous silicon

Quantum dots—a sample containing quantum-confined silicon nanoparticles

Perform the following experiments and reading:

Experiment 5.2 (in book “Porous Silicon in Practice”): Absolute reflectance spectrum (samples are provided in the kit)

Experiment 5.3 (in book “Porous Silicon in Practice”): Measurement of porosity and thickness using the Spectroscopic Liquid Infiltration Method (SLIM)

Experiment 5.5 (in book “Porous Silicon in Practice”): Measurement of porosity and thickness of a double-layer using the Spectroscopic Liquid Infiltration Method (SLIM)

Photoluminescence measurement (Section 5.5)