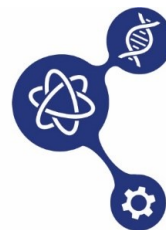


Seminario de Química Física



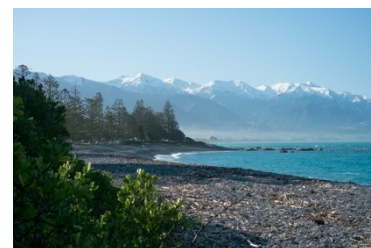
Martes 6 de Mayo de 2025 – 11:30 h



Salón de Actos de la Biblioteca

Prof. Baptiste Auguie

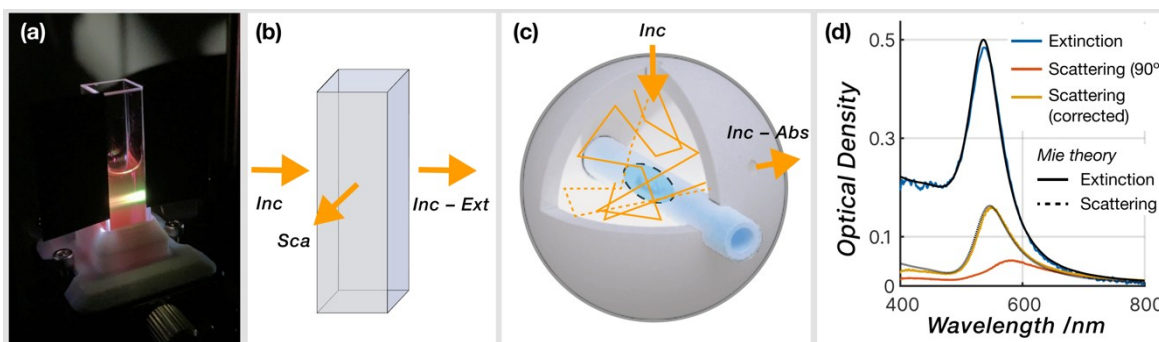
School of Chemical and Physical Sciences
Victoria University of Wellington, New Zealand



Recent advances in UV–vis spectroscopy of turbid solutions, and a brief overview of our activities in nano-optics

UV–vis optical spectroscopy is a powerful nondestructive material characterisation technique for micro and nanoparticles in solution, ubiquitous in many fields. The technique however requires that liquid samples cause minimal scattering to the probing light. Furthermore, traditional UV–vis spectroscopy cannot distinguish between scattering and absorption contributions to extinction, yet many applications rely on one component versus the other.

I will describe our recent and on-going efforts using an integrating sphere technique to bypass such limitations and measure pure absorption spectra. Scattering may also be measured in a 90-degree configuration, providing a complementary characterisation to both transmission and absorption (Figure below).



The integrating sphere technique has also been applied to challenging samples consisting of resonant plasmonic nanoparticles surrounded by dye molecules or by metal-catalyst satellites. The method's key strengths are: i) full angular and spatial averaging; ii) robust non-imaging optics; iii) recycling of scattered light inside the cavity; iv) increased pathlength. This combination enables the measurement of minute changes in absorption against a turbid reference sample.

The presentation will also introduce our research lab, with main activities ranging from plasmonics, surface-enhanced optical spectroscopies and electromagnetic modelling of light scattering by nanoparticles. For more information and references: <https://nano-optics.ac.nz/>