



Contribution ID: 21

Type: **Talk**

Optical characterization of detector materials using VULCAN

Vacuum ultraviolet (VUV) scintillation light is central to noble-liquid detectors used in neutrino and dark matter experiments. Understanding the optical response of detector materials under VUV excitation is therefore important for detector design, performance optimization, and background mitigation.

The Vacuum Ultraviolet Light Characterization At Nikhef (VULCAN) setup is a tabletop experiment combining VUV excitation with single-photon-sensitive optical measurements. VULCAN enables studies of material reflectance, fluorescence spectra, fluorescence timing, and wavelength-shifting performance. Recent measurements include reflectance studies of materials relevant for the DUNE cryostat, investigations of photoluminescence from detector materials and components, and studies of fluorescence induced by solder-flux residues, which have been identified as a potential source of nuisance optical signals in noble-liquid detectors. We also discuss the characterization of wavelength-shifting materials such as polyethylene naphthalate (PEN) and their application in light-collection systems for future experiments.

Primary author: VAN NULAND-TROOST, Marjolein (Nikhef)

Presenter: VAN NULAND-TROOST, Marjolein (Nikhef)