Fungal pathogens such as molds can have deleterious effects on human health and industrial crops. Reduction of the damage caused by mold growth depends on quick and accurate diagnosis. Currently, identification methods are based on morphological characterization and/or DNA analysis, processes which may take many hours or even several weeks to accomplish. We are developing an optical method of species identification, based on Raman spectroscopy, which may be completed in a matter of minutes.

In this talk I will outline the concepts and challenges associated with Raman interrogation of mold spores and discuss some of the surprises we have encountered along the way, such as how the wavelength of excitation allows for probing different structures of the spore as well as Raman peaks that appear in unexpected regions of the spectrum.

Figure 1. Raman spectra of *Aspergillus nidulans* (top), *Aspergillus niger* (middle), and *Aspergillus clavatus* (bottom), taken with excitation wavelengths of 532 nm (green), 660 nm (red), and 785 nm (brown).