I prefer a platform presentation but if there is no slot, poster will be fine.

I am not a student.

**Submicron IR combined with simultaneous Raman, or co-located Fluorescence to provide fast and accurate identification of Micro- and Nano-Plastics**

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The problem of microplastic (MP) contamination is recognized as a major concern around the world. To date, there lacks a robust testing method for smaller microplastic particles. FTIR micro-spectroscopy suffers from limited spatial resolution and scattering artifacts. Raman microscopy offers better spatial resolution, but may suffer from autofluorescence, weak signal, and sample damage. Recent studies show that both methods are limited to MPs >20 µm.

A new approach to IR micro-spectroscopy, called “Optical Photothermal Infrared (O-PTIR)” spectroscopy, has demonstrated unique ability to generate IR spectra at submicron spatial resolution without common IR scattering artifacts. O-PTIR uses an infrared pump laser to excite the sample and a visible probe laser to measure the IR absorption. When possible, the visible laser can be used for simultaneous acquisition of Raman spectra. Fluorescence, which can be caused by additive colors or a natural effect, can overwhelm Raman signal but does not affect IR measurement. Specificity provided by fluorescent labeling can guide the measurement of IR, thus improving time efficiency.

In this presentation, we will introduce O-PTIR, provide examples of micro- and nano-plastics measurement and show examples where Raman is overwhelmed by fluorescence while O-PTIR provides great spectra.