"UNVEILING" FLUORESCENCE SPECTRA: THE ROLE OF QUENCHING MECHANISMS IN FLUORESCENCE ANALYSIS. ***Kyle Edenzon*** *and Todd Pagano*[*], Dept. of Science & Mathematics- Laboratory Science Technology program, National Technical Institute for the Deaf @ Rochester Institute of Technology; kde5097@rit.edu, tepnts@rit.edu.

Despite its advantageous versatility and sensitivity, several phenomena mask and hinder the qualitative and quantitative analysis of fluorescence spectra. These factors include radiative inner filtering, dynamic oxygen quenching, non-radiative resonance energy transfer, and static quenching. The primary focus of this work is the investigation of the inner filter effect and oxygen quenching. Though it is difficult to avoid quenching in fluorescent measurements, it is imperative to investigate and characterize the factors that cause these deviations from spectra that would otherwise be free from quenching effects. Subsequently, data can be manipulated to compensate for quenching effects and "corrected" data can be concluded. The concealing of fluorescence spectra of polyaromatic hydrocarbons (PAHs) due to the inner filter effect, and the techniques used to correct collected spectra for inner filtering, will be reported. As well, the influence of oxygen quenching on collected PAH fluorescence spectra, and purging procedures for the deoxygenation of solutions, will be discussed. The acquired information can help to assess the masking of fluorescence responses by these phenomena in many applications of fluorescence spectroscopy, while also aiding in the understanding and characterization of water and soil contamination detected by laser induced fluorescence (LIF) with cone penetrometer technology (CPT) instruments.