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The purpose of the visit was to learn about the technical principles and practical use of the Broida oven to produce molecules for spectroscopic applications. My host, Prof. Dennis Tokaryk, specializes in using the Broida oven for spectroscopic characterization of molecules. To familiarize ourselves with the new experimental setup, we began by discussing the idea of the oven and the role of its various components in molecules production. This was combined with a demonstration of laser-induced fluorescence spectrum measurements for FeH and FeD molecules (see Fig.1).



Figure 1 Laser induced fluorescence spectrum of FeH molecule produced in Broida oven

Over the next few days, under the supervision of Prof Tokaryk, I prepared a Broida oven to produce SrO molecules from metallic Sr and N<sub>2</sub>O. By monitoring SrO chemoluminescence, I optimized the oven operating parameters in order to improve the efficiency of the molecules production. The unique design of the oven in Prof. Tokaryk's laboratory also made it possible to test the hydrogen or nitrogen plasma to activate or enhance the production of molecules. Finally, we recorded the SrO chemoluminescence spectrum with a Fourier transform spectrometer, in which we noted the presence of three bands. This situation gave me an excellent opportunity to learn about Broida oven applications in molecular spectroscopy. I had a unique chance to test influence of each machine part and their working parameters on the quality of measurement results. This visit allowed me to gain a knowledge about new experimental methods of producing molecules as well as to increase my skills in spectroscopic techniques.