Polycyclic aromatic hydrocarbons (PAHs) are organic molecules found in the environment. The PAHs are formed from incomplete combustion, are found in diesel exhaust particles, grilled foods, gas burners, emission from wood, and cigarette smoke. These compounds are known to be carcinogenic and mutagenic. Spectroscopic studies were performed on two PAHs, 9,10-dihydrobenzo(a)pyrene (7,8,9,10-tetrahydrobenzo(a)pyrene), which helped to characterize them. Also, a theoretical infrared study was done on 9,10-H$_2$BaP, a scaling factor was found for a simulated infrared spectrum.

## References
1. Herreno-Saenz, D; Evans, F; Beland, F; Fu, P. Chem. Res. Toxicol., 1995, 8(2), 269-277

## Infrared Spectrum
Using the density functional theory, a simulated spectrum was created. A scaling factor was found so that the experimental and the simulated spectra overlaid more closely. The scaling factor of 0.98 was used.

## NMR
Nuclear Magnetic Resonance (NMR) spectroscopy helps in determining the structure of a compound through many different 1-D/2-D techniques. Shown below is the $^{13}$C spectrum for both compounds which show the number of carbons present in the molecule.

## UV-vis
These are the compiled UV-vis spectra of the two compounds dissolved in different solvents. For both compounds, the solvent, chloroform shifted the spectrum more to the red/to the right). The bottom right spectrum shows the compiled spectrum of the two compounds dissolved in the same solvent.

## Two Compounds Studied

## Abstract
Polycyclic aromatic hydrocarbons (PAHs) are organic molecules found in the environment. The PAHs are formed from incomplete combustion, are found in diesel exhaust particles, grilled foods, gas burners, emission from wood, and cigarette smoke. These compounds are known to be carcinogenic and mutagenic. Spectroscopic studies were performed on two PAHs, 9,10-dihydrobenzo(a)pyrene-7(8H)-one and 7,8,9,10-tetrahydrobenzo(a)pyrene, which helped to characterize them. Also, a theoretical infrared study was done on 9,10-H$_2$BaP, a scaling factor was found for a simulated infrared spectrum.