

Travis Zuniga

Senior Division Chemistry

Analysis of Fuel Composition by Gas Chromatography/Mass Spectrometry (GC/MS)

The purpose of this project is to determine if three different grades of gasoline from three different suppliers are the same. In order to do this, a Gas Chromatography/Mass Spectrometry (GC/MS) was used for analysis because it allows the separation of the different structures of the gasoline and then allows for identity of each one. The hypothesis was to prove that gasoline at the same octane levels do not have the same similarities. The materials used in the procedure included three samples of each of the different octane levels of gasoline from three different suppliers, 9 mason jars to collect the samples of gasoline, nine labeled test tubes for sampling, 5 standard samples for spiking, Acetone used to dilute the gasoline samples, microsyringe, and a GC/MS machine. Upon completion of this project, it was determined that all grades of gasoline from the Western Convenience were presumably the same compound. There were no detectible differences. However, there were some notable differences in the samples from the two other suppliers. It was found that different octane levels of gasoline as well as different suppliers contain components which are not common to all types of gasoline. It was further determined that mid-grade gasoline was the one that was most fuel efficient for this project.