

Thermal polymerization of low reaction times was used to produce a low fragmentation naphthalene pitch. In the past, a catalyst or long heat soaks have been used to produce naphthalene pitch. However, these all result in a pitch which contains thousands of different compounds, and while the pitch itself proves to be quite useful, it is exceedingly difficult to isolate and study the compounds being formed. This low fragmentation pitch contains only the naphthalene oligomers with one or two fragmentation compounds, allowing us to finally fractionate and study naphthalene pitch more closely. Because typical fractionation techniques are not selective enough or do not produce quantities large enough for further testing, semi-continuous supercritical extraction (SCE) using toluene and acetone was used to fractionate the pitch into its constituent oligomers. This technique allows us to selectively extract one oligomer at a time from the pitch by varying the density of the extracting solvent, giving us pure oligomer products, which are otherwise unobtainable. In addition, this technique can produce multiple grams of each oligomer. In doing so, we are able to study the properties and kinetics of the predominant molecules of interest in the pitch, the pure oligomers.