

PRODUCTION OF AZA-FULLERENES: SYNTHESIS, SEPARATION AND DETECTION

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Fullerenes are one of three allotropes of carbon (diamond, graphite are the others). C_{60} or buckminsterfullerene is a spherical molecule that is composed of 12 pentagons and resembles the shape of a soccer ball. A novel form of this is aza-fullerenes or fullerenes that contain nitrogen and carbon. In this research project, a systematic approach is undertaken by a group of students to investigate different microwave and sonochemical approaches to assembling aza-fullerenes (i.e. $C_{48}N_{12}$) from pyrrole, then using flash chromatography to separate the mixture and several techniques such as FT-IR, UV/Vis absorbance spectroscopy, LC-MS and TOF-MS to identify its structure. Because of the symmetry of the structure coupled with the chemical and physical properties of amine containing sphere, these molecules have been predicted to have more attractive properties in terms of electronic components and novel medical applications.