

Grethel Miro

Dr. David Becker

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Abstract

Azulenyl nitron (AZN) is a bright green compound that can be used to stain different compounds, including plastics. When these stained plastics are irradiated, as they commonly are in the sterilization of medical devices, AZN changes color from green to red, constituting a permanent change. This would make obsolete the current methods of radioactive labeling and maintain the integrity of medical equipment. Although a method of synthesis is already in place, the aim was to improve the yield significantly and find a more efficient and cost-effective procedure. Last year, the procedure used resulted in 18 to 20% of AZN synthesized at the most favorable conditions. With that in mind, this year modifications were done in the hopes of improving the yield. The solvent was changed to a mixture of isopropanol and triethylamine, a stronger base, and a catalytic amount of N-tertbutyl hydroxylamine hydrochloride was used (around 4 equivalents). The reaction time was also increased to 7 days, rather than 2. After several trials, the samples were run through column chromatography and the average yield was 70%, a much more promising result than that obtained last year. There is still research to be done to improve the technicalities of the procedure, including altering the amounts of N-tertbutyl hydroxylamine hydrochloride to try and obtain similar data with fewer amounts. This portion of the research will be done in the second half of the year. In the meantime, however, a novel and more efficient method of synthesis has been established for the production of AZN that can be potentially commercialized.