

C<sub>60</sub> dissolved in hexane and heptane was treated with O<sub>3</sub>. HPLC was carried out with a Cosmosil column, 2 ml/min toluene and 100 μl injected. When needed, fluids were filtered through 0.2 μm PTFE. The HPLC results were essentially the same for both solvents. The C<sub>60</sub> peak occurs near 4.0 min; the C<sub>60</sub>O peak near 4.55 min.

Ozonation of the pure solvents shows that no HPLC detectable compounds formed.

Fig.1. Ozonation in hexane at an early stage. The first peak to appear is at 5.8 min. The C<sub>60</sub> peak is truncated.

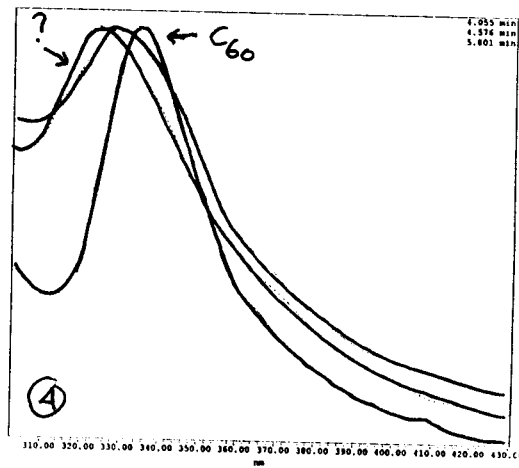
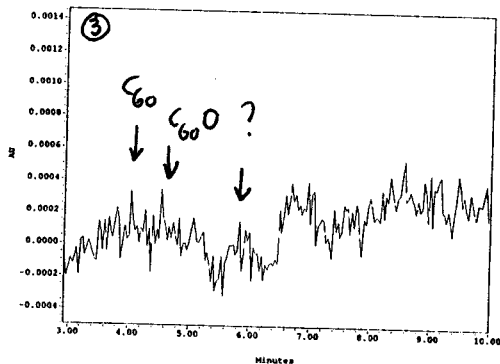
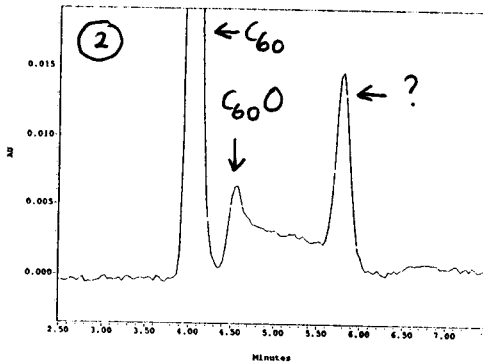
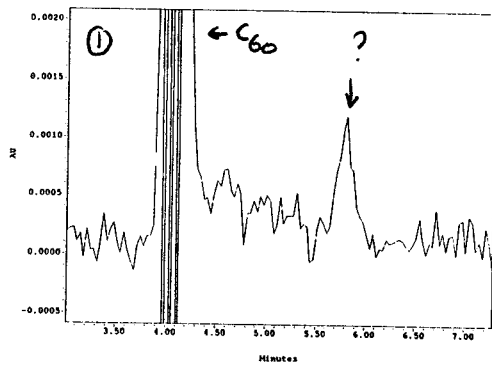
Fig. 2. Ozonation in heptane. The 5.8 min peak remains dominant even when C<sub>60</sub>O appears. Note the 'tail' following the C<sub>60</sub>O peak. It occurs in nearly every chromatogram.

Fig. 3. Eventually, all substances, including the 5.8 min substance are destroyed and the chromatogram is empty.

Fig. 4. UV-Vis spectra, from right to left, of C<sub>60</sub> (4.00 min; max at 336.2 nm); C<sub>60</sub>O(4.58 min; max at 329.0 nm) and ?(5.80 min; max at 324.2nm). Note that the ? spectrum is 'fullerenic'.

Observations

- 1) no clear-cut and significant C<sub>60</sub>O<sub>2</sub> peak was seen in any of the 27 distinct HPLC chromatograms.
- 2) The peak at 5.8 min occurs prominently in every ozonation. What is the substance? Perhaps an unusually stable isomer of C<sub>60</sub>O<sub>3</sub>? Or C<sub>119</sub>, or C<sub>120</sub>O? Any suggestions?



Chromatograms: horizontal = time in minutes; vertical = absorption at 330 nm.  
 UV-Vis spectra: range is 300-410 nm.