

THE USE OF C₆₀ AS A MATRIX FOR THE STUDY OF IONS FROM INORGANIC SYSTEMS

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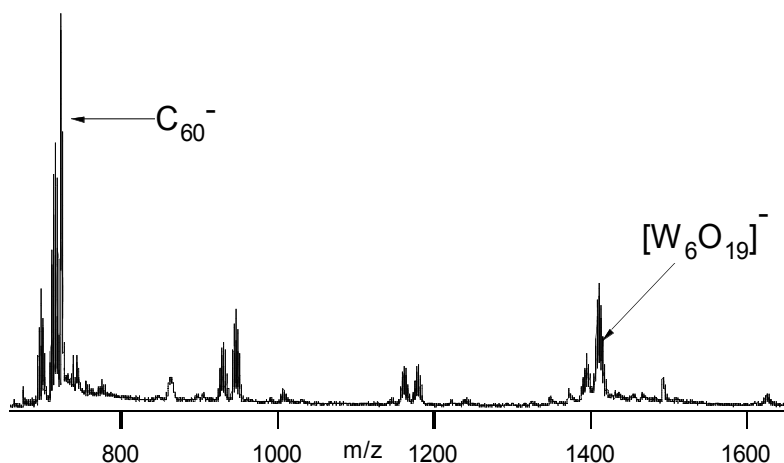
We have previously shown that C₆₀ may be used to assist Laser Desorption Ionization of inorganic and organic molecules.¹ C₆₀ has now been used on a variety of inorganic systems.

As a matrix C₆₀ cannot act as a proton donor or may not act as a proton acceptor. In general, co-crystallization of many compounds with C₆₀ is not possible unless the compounds are soluble in toluene or carbon disulfide. C₆₀ does have a significant absorption at 337 nm, the frequency of the nitrogen laser used in most MALDI experiments. The C₆₀ ion may be used as an internal calibrant as it is often present in the spectrum when used as a matrix.

Although many inorganic compounds such as the polyoxometalates are ionic with the oxometallate being present as the anion, difficulty is often encountered when trying to use mass spectrometry as a characterization technique.

The acidity of many matrix compounds often precludes their use with coordination complexes. Some low acidity matrix compounds may act as ligands displacing the original ligands in the metal complex. C₆₀ is a poor ligand and so these problems do not arise in the matrix use of this compound.

The spectrum below shows the negative ions observed in the MALDI examination of a polyoxotungstate using C₆₀ as a matrix.



1. C₆₀ Assisted Laser Desorption Ionization Mass Spectrometry. L. Michalak, D.S. Alderdice, K.J. Fisher, C. Disaklis and G.D. Willett, *Org. Mass Spec.*, (1994) **29**, 512.
C₆₀ Assisted Laser Desorption Ionization Mass Spectrometry in the Analysis of Phosphotungstic Acid. F.G. Hopwood, L. Michalak, D.S. Alderdice, K.J. Fisher and G.D. Willett, *Rapid Commun. in Mass Spectrom.*, (1994) **8**, 881.