

Iron Oxide Nanoparticles with Surface Capping Molecules

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Iron Oxide Nanoparticles with Surface Capping Molecules

- Mass spectrometry is used to determine the elemental composition of a molecule
 - Sample is ionized where ions are separated according to their mass-to-charge ratio
 - Signal is processed into spectra of the mass of the particles in the sample
- Sample is mixed with organic matrix to ionization molecules such as DNA, proteins, and polymers
 - Organic matrices typically produce high spectral background in low mass regions
 - Inhomogeneity related to crystallization
- Application of surface-functionalized and size-controlled iron oxide nanoparticles as matrix-assisted laser desorption ionization (MALDI) matrices
- Capping molecules such as oleic acid and polyacrylic acid are attached to the iron oxide nanoparticle core

Advantages

- Wide range of detectable compounds due to high sensitivity at low molecular weights
- Ideal for MALDI imaging since even shape and consistency in size reduces noise in spectra readings
- Superior enhancement of in-source delay (ISD) fragmentation
- Miscible with non-polar polymers

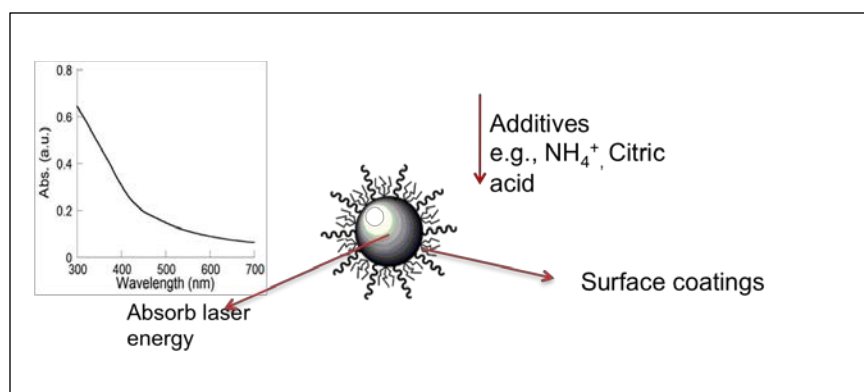


Figure 1. Iron oxide nanoparticle with capping molecules for MALDI

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