

Silicon nanoparticle-assisted laser desorption/ionization (SPALDI) mass spectrometry

Derivatized silicon nanoparticles are used as matrix in laser desorption/ionization (LDI) to provide sensitive and selective ionization of small molecules analysis with minimal low-mass background and high salt tolerance. Ionization and detection of precharged small molecules including drugs, peptides, pesticides, fatty acids and lipids have been successfully achieved by SPALDI mass spectrometry in both positive and negative ion mode. Due to its high sensitivity, selectivity and salt tolerance, SPALDI mass spectrometry is capable of fast screening and analysis for crude samples such as the detection of drugs in urine, pesticides in soil and fatty acids in milk and ticks.

