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Inductively Coupled Plasma Mass Spectrometry - Medistri

🚀 Inductively Coupled Plasma Mass Spectrometry

Inductively Coupled Plasma Mass Spectrometry, often referred to as ICP-MS, is a highly versatile analytical technique used for the detection and quantification of many elements. The technique uses an inductively coupled plasma to produce ions from a sample. These ions are then separated and detected by the mass spectrometer.

One of the key advantages of ICP-MS is its sensitivity. It can detect and measure concentrations of elements at very low levels, often in the parts per billion or even parts per trillion range. This makes it a valuable tool in fields such as environmental monitoring, pharmaceuticals, and many others where trace element determination is important.

The process begins with the introduction of the sample, typically in liquid form, into a plasma, which is a very hot, partially ionized gas. The energy of the plasma is sufficient to atomize the sample and to ionize the atoms, creating a cloud of ions. These ions are then extracted from the plasma and introduced into the mass spectrometer.

Inductively Coupled Plasma Mass Spectrometry is carried out in accordance to Pharmacopoeia USP 232 or Ph. Eur. 2.4.8.

1. USP 232: The United States Pharmacopeia (USP) General Chapter <232> (Elemental Impurities – Limits) sets the limits for the amounts of elemental impurities in drug products. These impurities can be catalysts or environmental contaminants that may be present in drug substances, excipients, or drug products. USP <232> recommends the use of modern instrumental techniques such as ICP-MS for the determination of these impurities.
2. Ph. Eur. 2.4.8: The European Pharmacopoeia (Ph. Eur.) chapter 2.4.8 was traditionally used for the testing of heavy metals in pharmaceutical products. However, since January 1, 2017, the testing parameters outlined in chapter 2.4.8 are no longer included in all monographs. The methods have been replaced with instrumental methods, including ICP-MS, which provide specific, quantitative determination of individual elemental impurities.

ICP-MS is a fast and sensitive elemental analysis technique that can measure almost all the naturally (and many non-natural) occurring elements.

🎯 To learn more about Medistri's Inductively Coupled Plasma Mass Spectrometry, visit on our website here or directly contact our team at contact@medistri.swiss.

- The Medistri Team

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