

A "Mobility Filter" that Widely Protects a Mass Spectrometer from Neutral Molecule Contaminations

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Presented is a small "mobility filter" that allows analyte ions to enter an evacuated mass spectrometer embedded in an ion-source buffer gas, while this gas is moved to an exhaust together with undesired neutral molecules. The purpose of this "contamination remover" is to bar these neutral molecules and in particular all nonvolatile molecules - like for instance phosphates - from entering the mass spectrometer where they could form detrimental deposits. In particular this device protects inlet capillaries or apertures where such deposits could clog these narrow passages.

This "mobility filter" is also capable to eliminate the in many cases abundantly available cluster or solvent ions of low masses and high mobilities and so allow precise mass analyses of larger analyte molecules. In some special cases also saturation effects can be avoided or at least reduced since space-charge effects caused by low mass ions can be avoided.