Aim

The aim of the experiments was to evaluate the utility of a travelling voltage wave superimposed on a confining voltage wave in the ion guide of a Quadrupole-ToF instrument. A new mobility separation device has been developed which exhibits the properties of an ion mobility separator (IMS) and a quadrupole mass spectrometer (MS). The separation of ion species according to their mobilities in the ion guide is achieved by application of an appropriate travelling voltage wave superimposed on the confining voltage wave. The system transmission in mobility mode is comparable to that in the standard MS modes of operation making it suitable for a broad range of applications in both qualitative and quantitative analyses.

EXPERIMENTAL

For the performance of the travelling wave-based ion mobility separator (TWIMS), an untapped Applied Quadrupole Q1 ion guide was used. A schematic diagram of the ion guide is shown in Figure 2. A separate pumping system was used to maintain the pressure inside the ion guide at elevated pressures. The ion guide is connected to a quadrupole mass spectrometer by a quadrupole interface, a separate pumping system was used to maintain the pressure inside the ion guide at elevated pressures. The ion guide is connected to a quadrupole mass spectrometer by a quadrupole interface. A separate pumping system was used to maintain the pressure inside the ion guide at elevated pressures. The ion guide is connected to a quadrupole mass spectrometer by a quadrupole interface.

Introduction

The development of an ion mobility separator as a single-stage device has been a challenge due to the technical difficulties involved in ion mobility separation. The need for a new device has been identified for the separation of isobaric ions, such as those present in complex biological samples.

The ion guide used in this work is a quadrupole Q1 ion guide. This ion guide utilizes a travelling voltage wave superimposed on the confining voltage wave to achieve ion mobility separation. The ion guide is connected to a quadrupole mass spectrometer by a quadrupole interface, and a separate pumping system was used to maintain the pressure inside the ion guide at elevated pressures. The ion guide is connected to a quadrupole mass spectrometer by a quadrupole interface.

The travelling wave-based ion mobility separator (TWIMS) uses a travelling voltage wave superimposed on the confining voltage wave to achieve ion mobility separation. This approach has been shown to be effective in the separation of ions with similar masses, such as those present in complex biological samples.

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