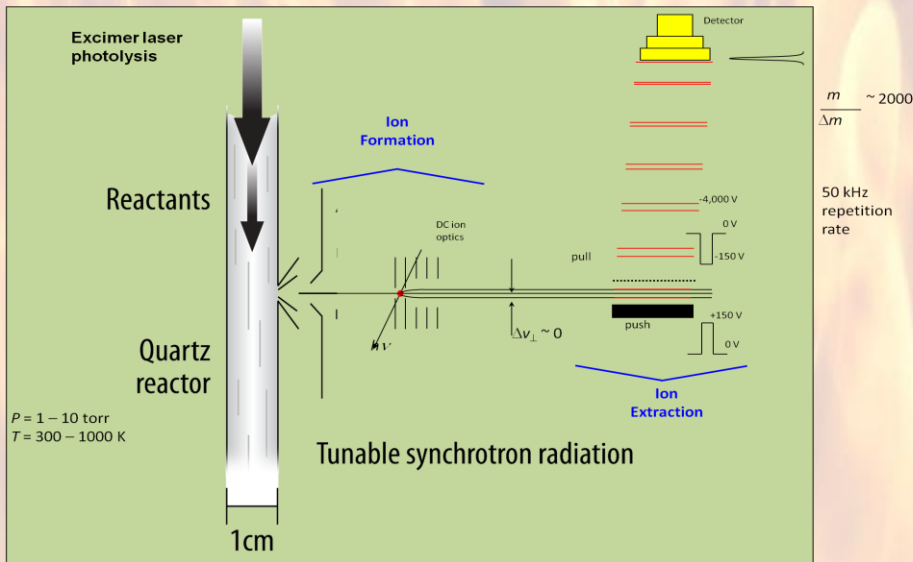


Synchrotron Photoionization Studies of Reaction Products and Intermediates of Biofuel Molecules Combustion

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The ion intensity is plotted against reaction time (t), E , and m/z . At a specific mass signal, ion intensity can be integrated over the entire photon energy spectrum to produce a kinetic plot of that specific mass signal. $t = 0$ ms represents the moment when the photolysis laser is fired. In the same manner, the ion signal of a specific m/z can be integrated over the entire reaction time to yield a photoionization spectrum.

The experiments are carried out using a novel combination of a side-sampled slow flow reactor and flash photolysis initiation of reactions coupled with a time- and energy-resolved time-of-flight mass spectrometer.

The branched C_5 alcohol isopentanol (3-methylbutan-1-ol) has been investigated in low-pressure (8 Torr) experiments in the 550–750 K temperature range. The mass-spectrometric experiments reveal a rich chemistry for the initial steps of isopentanol oxidation and give new insight into the low-temperature oxidation mechanism of medium-chain alcohols.

