2: SAMPLE INTRODUCTION

The selection of a sample inlet depends up on the sample and the sample matrix. Most ionization techniques are designed for gas phase molecules so the inlet must transfer the analyte into the source as a gas phase molecule. If the analyte is sufficiently volatile and thermally stable, a variety of inlets are available. Gases and samples with high vapor pressure are introduced directly into the source region. Liquids and solids are usually heated to increase the vapor pressure for analysis. If the analyte is thermally labile (it decomposes at high temperatures) or if it does not have a sufficient vapor pressure, the sample must be directly ionized from the condensed phase. These direct ionization techniques require special instrumentation and are more difficult to use. However, they greatly extend the range of compounds that may be analyzed by mass spectrometry. Commercial instruments are available that use direct ionization techniques to routinely analyze proteins and polymers with molecular weights greater than 100,000 dalton.