the case of a magnetic analyser where the m/z ratio varies exponentially with the value of the magnetic field, there should be as many points as possible.

**SIGNAL DETECTION AND DATA PROCESSING**

Ions separated by an analyser are converted into electric signals by a detection system such as a photomultiplier or an electron multiplier. These signals are amplified before being re-converted into digital signals for data processing, allowing various functions such as calibration, reconstruction of spectra, automatic quantification, archiving, creation or use of libraries of mass spectra. The various physical parameters required for the functioning of the apparatus as a whole are controlled by computer.

**Glassware preparation.** Use glassware that has been scrupulously cleaned by a method that will remove organic matter. Use TOC water for the final rinse of glassware.

**Standard solution.** Dissolve sucrose R, dried at 105 °C for 3 h in TOC water to obtain a solution containing 1.19 mg of sucrose per litre (0.50 mg of carbon per litre).

**Test solution.** Using all due care to avoid contamination, collect water to be tested in an airtight container leaving minimal head-space. Examine the water with minimum delay to reduce contamination from the container and its closure.

**System suitability solution.** Dissolve 1,4-benzoquinone R in TOC water to obtain a solution having a concentration of 0.75 mg of 1,4-benzoquinone per litre (0.50 mg of carbon per litre).

**TOC water control.** Use TOC water obtained at the same time as that used to prepare the standard solution and the system suitability solution.

**Control solutions.** In addition to the TOC water control, prepare suitable blank solutions or other solutions needed for establishing the baseline or for calibration adjustments following the manufacturer’s instructions; run the appropriate blanks to zero the instrument.

**System suitability.** Run the following solutions and record the responses: TOC water (r_u); standard solution (r_s); system suitability solution (r_s). Calculate the percentage response efficiency using the expression:

\[ \frac{r_u - r_s}{r_u - r_w} \times 100 \]

The system is suitable if the response efficiency is not less than 85 per cent and not more than 115 per cent of the theoretical response.

**Procedure.** Run the test solution and record the response (r_u). The test solution complies with the test if r_u is not greater than r_u. The method can also be applied using on-line instrumentation that has been adequately calibrated and shown to have acceptable system suitability. The location of instrumentation must be chosen to ensure that the responses are representative of the water used.

**2.2.45. SUPERCritical FLUID CHROMATOGRAPHY**

Supercritical fluid chromatography (SFC) is a method of chromatographic separation in which the mobile phase is a fluid in a supercritical or a subcritical state. The stationary phase, contained in a column, consists of either finely divided solid particles, such as a silica or porous graphite, a chemically modified stationary phase, as used in liquid chromatography, or, for capillary columns, a cross-linked liquid film evenly coated on the walls of the column.

SFC is based on mechanisms of adsorption or mass distribution.

**APPARATUS**

The apparatus usually consists of a cooled pumping system, an injector, a chromatographic column, contained in an oven, a detector, a pressure regulator and a data acquisition device (or an integrator or a chart recorder).

**Pumping system**

Pumping systems are required to deliver the mobile phase at a constant flow rate. Pressure fluctuations are to be