Preparation of Solvent Impregnated Resins

There are four methods available for immobilization of the desired extractant into the polymeric supporting structure.

1.3.5.2.3.2.1 Dry Method

The dry method is the most widely used impregnation method Navarro., et al (2000). It is especially suited to the impregnation of hydrophilic extractants such as amines and ketones. In this method the extractant is diluted using a suitable amount of diluent, this mixture is then placed in contact with the polymeric support and the excess solvent is then removed by evaporation in a vacuum oven.

1.3.5.2.3.2.2 Wet Method

The wet method investigated by Muraviev et al, (1998). In this method, before contact with polymeric support, the extractant is diluted in a pre-determined amount of diluent. The mixture of diluent and extractant is then placed in contact with polymeric support until the polymer has absorbed all liquid. The presence of solvent in the polymeric matrix gives the extractant molecules the possibility to diffuse to surface of the bead. The beads impregnated by the dry method do not contain any free solvent which is removed from the polymer during the drying stage. Hence, the extractant molecules appear to be distributed more or less homogeneously all over the three dimensional network and only the surface molecules can orient their functional groups towards the aqueous phase.

1.3.5.2.3.2.3 Modifier Addition Method

This method is considered to be a hybrid of the wet and dry impregnation. A modifier, such as dibutylpolypropylene glycol, which promotes water penetration into the polymer, is added. The diluent is then evaporated as in the dry method.

1.3.5.2.3.2.4 Dynamic Column Method

In this method the polymer is placed in contact with the diulent until it has become fully swelled . The polymer is then packed into a column, extractant is passed through the column until the inlet and outlet concentrations of the extractant are the same. The resulting SIR is then washed with water. This method has the advantages of

short impregnation time and high efficiency, which can be obtained not only in laboratory test but on an industrial scale.