

a totally synthetic gene was used. However, it appears that peptides with 30-35 amino acids or less are more economically produced by chemical synthesis.

### 2.3 Chemical Synthesis of Peptides

Although recombinant DNA techniques have captured most of the attention, chemical synthesis is emerging as an equal or superior way to produce large quantities of peptides. The Merrifield solid-phase procedure revolutionized peptide synthesis. When used in combination with purification techniques such as high-performance liquid chromatography (HPLC), the preparation of peptides 30 or 40 amino acids in length has become almost routine.

When one proceeds to the stepwise synthesis of longer peptides and of small proteins in the range of 50 to perhaps 150 amino acids in length, the problems that arise in the purification and characterization of materials often become formidable. Nevertheless, chemical synthesis of peptides continues to be the most important method. For all of these reasons, chemical synthesis of small proteins and peptides is likely to remain the method of choice.

Many techniques have been developed for the chemical assembly of amino acids to form peptides. They can be subdivided into solution and solid-phase methods. The former have evolved since the