Making Medicines: Teacher Notes

Further material for teachers and students is available in Chapter 1 of the RSC publication *Cutting Edge Chemistry* (T. Lister *Cutting Edge Chemistry*, London: Royal Society of Chemistry, 2000).

It may be worth explaining to students the use of the terms ‘drug’ and ‘medicine’, especially as the term drug is often associated with substances such as heroin, cocaine and ecstasy that are often abused.

A drug is a substance that affects how the body works – either for better or worse. A medicine improves health. Medicines contain beneficial drugs as their active ingredients as well as other substances that make them easy or convenient to take.

A newly synthesised chemical that is a potential drug is often referred to as a new chemical entity (NCE).

The functional group attached to the resin and through which the starting material is attached to the resin is often $–CH_2Cl$.

The acid often used to cleave the finished compounds from the resin is trifluoroethanoic acid.

It may be worth stressing to students that chemists are required to design the synthetic methods used in combinatorial chemistry. The syntheses they devise must be general ones that can be used to make several members of a class of compounds. Once a particular molecule has been selected for further work, an alternative synthesis may well be designed that produces the specific compound required. This synthesis may be more efficient than the general method and it may be more suitable for large-scale use.

Once combinatorial synthesis is complete, mass spectrometry and nuclear magnetic resonance (NMR) spectroscopy are used to confirm the identity of the compounds that have been made.