Figure 1552

Retro Diels-Alder reactions used in the synthesis of reactive double bonds.

Hetero retro Diels-Alder reactions are also known, and they have been used as a strategy in synthesis when the heteroatom-containing component is a small, stable molecule such as carbon dioxide, nitrogen, or sulfur trioxide, which boils away when formed and leaves no trace of a byproduct behind (Figure 1553).

Figure 1553

Hetero retro Diels-Alder reactions.

cycloaddition

cycloreversion

cycloaddition