

Nitrogen Compounds and Polymers

The key areas of study in this topic are:

- Amines
- Amino acids, amides and chirality
- Polyesters and polyamides



By the end of this topic I should be able to:

	Start	End
Explain the basicity of amines in terms of proton acceptance by the nitrogen lone pair and the reactions of amines with dilute acids, e.g. $\text{HCl}_{(aq)}$, to form salts		
Describe the preparation of: <ul style="list-style-type: none"> • aliphatic amines by substitution of haloalkanes with excess ethanolic ammonia and amines • aromatic amines by reduction of nitroarenes using tin and concentrated hydrochloric acid. 		
State the general formula for an α -amino acid as $\text{RCH}(\text{NH}_2)\text{COOH}$		
Describe the following reactions of amino acids: <ul style="list-style-type: none"> • carboxylic acid group with alkalis and in the formation of esters • amine group with acids 		
Describe the structures of primary and secondary amides		
Describe optical isomerism (an example of stereoisomerism, in terms of non-superimposable mirror images about a chiral centre)		
Identify chiral centres in a molecule of any organic compound.		
Describe condensation polymerisation to form polyesters and polyamides		
Describe the acid and base hydrolysis of: <ul style="list-style-type: none"> • the ester groups in polyesters • the amide groups in polyamides 		
Predict from addition and condensation polymerisation: <ul style="list-style-type: none"> • the repeat unit from a given monomer(s) • the monomer(s) required for a given section of a polymer molecule • the type of polymerisation. 		

In all topic areas you should be able to demonstrate and apply your knowledge and understanding.

