Experimental Technique

Filtration ?   Used to mainly separate suspensions ?
        E.g. chalk and water ?   Filter paper is aligned around the inner surface of a filter funnel and the solution is passed through. ?   The solute (suspension) particles are trapped by the filter paper as residue ?   The solvent passes through the filter paper and collects as filtrate   Evaporation ?   Used to separate solutions usually with a solute that consists of particles which have been spread throughout the solvent and are too small to be obtained in filtration. ?
         Solution heated and solvent evaporates leaving solid behind. ?
         Salt obtained from solution by this method Crystallization ?
         Solids from solution can be separated by letting them form crystals (E.g. copper(II) sulphate) ?   When a solution of copper (II) sulphate is cooled, then crystals of the salt form because it is less soluble at a lower temperature. ?   In crystallization, a solution of copper (II) sulphate is heated so that some of the water evaporates leaving a more concentrated solution of the salt. ?
          The solution can be checked to see if it is ready by placing one drop on a microscopic slide, and crystals should form on the cool glass ?   The solution is then left to cool and crystallize. The crystals are removed by filtering, rinsed with water and dried with filter paper. Distillation ?
          Method used to obtain pure solvent from a solution ?
          E.g. obtaining pure water from salt water ?
          Solution heated in flask, it boils and steam rises into condenser, leaving salt behind ?
          Condenser is cold and steam condenses into water which drips into beaker completely pure (distilled water). Separating Funnel ?   Used to separate liquids that are immiscible (form layers on one another) ?   When a mixture of oil and water is poured into the funnel, the oil floats on top. When tap opened, water runs out and closed when layer of water finished. Fractional Distillation ?
          Used to separate two miscible liquids that have different boiling points ?
          E.g. a mixture of ethanol and water ?
          Mixture is heated; at 78?C ethanol begins to boil. Some water evaporates too. This mixture of ethanol vapour and water vapour condenses in the cool glass beads in the column, making them hot ?
          When the glass beads reach 78?C, ethanol vapour no longer condenses on them, only water vapour does. The water vapour then drips back into the flask, whilst the ethanol rises through into the condenser. ?
           The cool condenser forces ethanol to condense (liquid ethanol) and drip into the beaker ?
           When the thermometer rises above 78?C, it is a sign that ethanol has been separated to heating can stop. Paper Chromatography ?   Used when chemists want to analyze a mixture (find out what substances are present in it). ?   E.g. finding out what dyes and preservatives added to food ?   Method of separating solutes in a solution ?
          When a drop of solution applied to paper, the paper absorbs solute/binds it to surface. As the solvent rises, some solute stays put and others dissolve in the solvent and travels through the paper. ?
          A paper very soluble travels through the paper faster than one which is slightly soluble ?
          When the solvent reaches the top of the paper, the process stops and different spots are left on the paper. ?   Each spot represents another solute, this way they are separated ?
          Different solutes travel different distances depending on solubility ?
          Many solvents used, ethanol, ethanoic acid, propanone ?
          With a solvent other than water, a closed container should be used so that the Chromatography paper is surrounded by the vapour of the solvent. ?   Also separate a mixture of coloured substances (e.g. in black ink) ?   On a circular filter paper, substances more soluble will form larger circles with least soluble forming smaller circles Purity based on melting/Boiling Points ?
           Substances can be identified using their boiling and melting points ?
           Pure substances change state at a constant temperature whilst impure substances change over a range of temperature. ?   If a solid is not pure, its melting point will be low and its boiling point will be high. ?   Impurities widen the range over which the substance is liquid. ?
           The surrounding pressure can increase and decrease boiling and melting points. If the surrounding pressure falls, the boiling point falls. An increase in pressure raises the boiling point. ?
           No two substances have the same boiling point and same melting point

About the Author

Source: http://crampuppy.com