SEPARATION TECHNIQUES

Key Concepts

- Mixtures can be separated by physical methods: filtration, distillation, chromatography, evaporation, sieving, and centrifugation.
- The choice of separation method depends on the properties of the substances in the mixture.

Key Facts to Remember

- **Filtration:** Separates insoluble solids from liquids using a filter. Example: Sand from water.
- **Distillation**: Separates liquids based on differences in boiling points. Simple distillation separates one liquid from a mixture (e.g., water from saltwater), while fractional distillation separates multiple liquids (e.g., ethanol from water).
- **Evaporation:** Removes the liquid, leaving dissolved solids behind. Example: Extracting salt from seawater by evaporating the water.
- **Chromatography:** Separates substances based on solubility and how they move through a medium. Example: Separating pigments in ink using paper chromatography.
- **Sieving**: Separates particles of different sizes by passing the mixture through a mesh or sieve. Example: Removing stones from flour.
- **Centrifugation:** Uses rapid spinning to separate components based on density. Example: Separating cream from milk.
- **Magnetism**: Separates magnetic materials from non-magnetic ones. Example: Iron filings from sand.
- **Decantation:** Separates layers of liquids or solids and liquids by pouring off the top layer. Example: Oil and water.

Quick Questions

1. What technique would you use to separate sand from water?
2. How does distillation separate liquids?
3. Why is evaporation effective for extracting salt from seawater?
4. What property allows chromatography to separate pigments?
5. How does centrifugation work in separating cream from milk?
6. What type of mixture can be separated using magnetism?
7. When is sieving the best method to use?
8. What is fractional distillation, and where is it used?

Fun Fact

The fractional distillation of crude oil in refineries produces essential products like petrol, diesel, and kerosene!