SOLVENT EXTRACTION (LIQUID-LIQUID EXTRACTION)

SEPARATION BASED ON SOLUBILITY IN TWO IMMISCIBLE SOLVENTS

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APPLICATIONS & SOLVENT SELECTION

- Applications:
- 1. Isolating compounds
- 2. Removing impurities

- Ideal Solvent Should:
- • Dissolve target
- • Low boiling point
- • Non-reactive & immiscible with water
- • Inexpensive & safe

EXAMPLE SOLVENT: DIETHYL ETHER

- • Formula: (C2H5)2O
- • bp: 34.6 °C | Density: 0.713 g/mL
- • Slightly soluble in water
- • Advantages:
- - Strong solvating power
- - Easily removed due to volatility
- - Efficiency increased by Salting Out

KEY CONCEPTS: SALTING OUT & PARTITION COEFFICIENT

- Salting Out:
- Adding NaCl increases aqueous polarity → better extraction

- Partition Coefficient (K):
- $K = C_{org} / C_{aq}$

PRACTICAL EXPERIMENT

- Extraction of 4-hydroxybenzaldehyde:
- 1. Place mixture in separatory funnel
- 2. Add 20 mL ether + 20 mL water
- 3. Shake gently → vent pressure
- 4. Separate and dry organic layer