

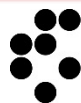


# Introduction to radionuclide separation techniques

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# Radionuclide separation

- Selective precipitation
- Ion exchange chromatography
- Liquid-liquid extraction
- Extraction chromatography
- Distillation
- ...

# Selective precipitation

- Separation based on differences in solubility at different chemical conditions (usually pH)
- One radionuclide stay in solution, other precipitate out => you can separate them
- Examples:
  - Sr from Ca with fuming nitric acid
  - Ra from Pb by forming  $\text{Ba}(\text{Ra})\text{SO}_4$  precipitate at pH 3-4

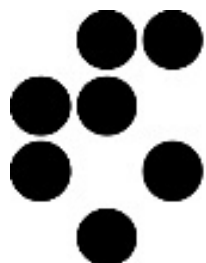


# Extraction chromatography

- Combines organic extractant incorporated in to inert resin
- Resemble liquid-liquid extraction but enables column separation
- Examples of chromatographic extraction resin from Eichrom and main application:
  - UTEVA – uranium separation
  - TEVA – thorium separation
  - Sr Resin – Sr separation, Pb separation



# meet cinch



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