

## E2-10: Use of a coconut oil based ligand for the extractive separation of tungsten(VI)

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N-phenylhydroxamic acid type ligand was prepared using coconut oil as the starting material. By comparison of the UV absorption spectra of the ligand and the visible spectra of the iron(II)- ligand complex, with previous results, the authenticity of the ligand was confirmed. Our previous communication indicated the successful application of this ligand for the extractive separation of tungsten(VI) using a solvent mixture containing 5% dichloromethane and 95% hexane.

The extraction curves of tungsten(VI) and molybdenum(VI) show a remarkable deviation from the expected sigmoidal curve. Both exhibit 2 humps, at 3M and  $10^{-3}$ M hydrogen ion concentration for tungsten (VI) and at 6M and  $10^{-1}$ M hydrogen ion concentration for Mo(VI), indicating the possible formation of different complexes of the metal ions with the ligand. The maximum extraction of tungsten(VI) (70%), could be observed in the higher acidic region and the maximum extraction of molybdenum(VI) (98%) in the lower acidic region. At all hydrogen ion concentrations, the percentage extraction of molybdenum(VI) was higher than tungsten(VI), indicating the incapability of selectively extracting tungsten(VI) in the presence of molybdenum(VI) by pH control.

EDTA which was used as a masking agent, had the ability of masking molybdenum(VI) in the presence of tungsten(VI) at pH 3.5. 50% of tungsten(VI) could be selectively extracted by using a 5% EDTA solution as masking agent, in the presence of 35-fold molar excess of iron(II), 35-fold molar excess of iron(III), 70-fold molar excess of aluminium(III), 35-fold molar excess of chromium(III), 35-fold molar excess of vanadium(V) and 20-fold molar excess of molybdenum(VI).