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Metals determination in some petroleum industry spent catalysts

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Abstract In the petroleum refining industries, the spent catalysts represent a major source of solid wastes, together with different types of sludge or other spent chemicals. In the last years, increasing attention has been paid to the development of recycling or recovery processes for the waste catalyst materials as much as possible. The analytical characterization of spent catalysts resulted from petroleum refining technologies is an important tool for recycling and utilization processes development. The paper aims to present the concentration in Co, Ni and Mo in four spent catalysts' samples from S.C. Rompetrol Rafinare S.A., Constanta, Romania. Metals concentrations were determined using flame atomic absorption spectrometry (ZEENIT 700) after the proper mineralization with nitric acid and hydrogen peroxide. Previously the water content and the loss for each spent catalyst have been measured. The obtained results show that the studied wastes could be considered as a valuable secondary raw material source for Mo, Ni or Co recovery. Two of the studied spent catalysts have Co concentration in 0.2-0.5% range, Mo 9.1-12.0% and Ni 0.13 - 1.25%.

Keywords: spent catalysts, Co, Ni, Mo, FAAS

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