

## POWDER DIFFRACTION IN THE PETROLEUM AND PETROCHEMICAL INDUSTRIES

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The petroleum industry is generally divided into two parts: exploration and production (“upstream”) and refining and petrochemicals (“downstream”). Selected examples of the application of powder diffraction to downstream problems, and the processes for obtaining the results, will be presented. These include the corrosion deposits  $[\text{Al}(\text{H}_2\text{O})_6][\text{Al}(\text{H}_2\text{O})_5(\text{SO}_4)](\text{H}_3\text{O})_2(\text{SO}_4)_5$ ,  $(\text{NH}_4)\text{Fe}(\text{CO}_3)(\text{OH})_2$ , and  $(\text{NH}_4)\text{Fe}_2\text{S}_3$ . *In situ* studies of extraframework species in FAU zeolite catalyst model systems will be discussed. Structural characterization of  $(\text{Bi}_x\text{Ce}_{2-x})\text{Mo}_3\text{O}_{12}$  selective propylene ammoxidation catalysts will be described.