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Elaboration and structural study of Ni/SiOCo/SiO₂ and Ni-Co/SiO₂ nanocomposites

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Abstract : The present work examines the structural properties of Ni, Co and Ni-Co supported on silica. The samples are prepared by impregnation, followed by calcination and thermal H₂- treatment. Several techniques, such as SEM and XRD, are used for the characterization of the samples at different steps of their elaboration. After impregnation, the X-rays diffraction reveals the formation of nickel and cobalt silicide (NiSi, Co₂Si, NiCoSi and Ni_{20.56}Co_{3.44}Si). After calcination, the XRD pattern presents the features of nickel and cobalt oxides (NiO, Co₃O₄, NiCoO₂, NiCo₂O₄ and CoO) with an average size of 10-25 nm. After H₂- treatment, the metallic phases (Ni, Co and Ni_{0.75}Co_{0.25}) appear at T 350°C

Keywords : nanocomposites, Structural properties, Co₂Si, NiCoSi, NiO, Co₃O₄, NiCoO₂, NiCo₂O₄, Metal/Support interaction.