

عنوان مقاله:

Simulation of nickel production from nickel oxide reduction using syngas produced by cobalt oxide reduction via CH₄

محل انتشار:

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خلاصه مقاله:

In this paper, cobalt, nickel, and bimetallic cobalt-nickel were produced using the pyrometallurgical method. Simulation of cobalt production was carried out using a cobalt oxide reduction reaction by methane gas as a reducing agent under atmospheric pressure. This process is simulated under thermochemical equilibrium via Aspen Plus software. The effects of different process conditions such as reduction temperature and mole flow rate of methane were investigated for the production of cobalt and syngas(H₂+CO). In addition, the simulation of nickel production from nickel oxide reduction was performed using syngas produced from cobalt oxide reduction. Cobalt and nickel were produced in a continuous process. Simulation results demonstrated that more than 98% conversion of cobalt and nickel oxides to cobalt and nickel, respectively. Investigation of the production of bimetallic Ni_x-Co(1-x) with methane was evaluated by considering the relative compositions of NiO (x= 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.1) in (NiO)_x-(CoO)_(1-x) binary mixture.

کلمات کلیدی:

.Simulation, Pyrometallurgical, Cobalt, Nickel, Bimetallic, Reduction, Syngas

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