Institute of Chemical Engineering

Experimental Study on Direct and Indirect Carbonation of Fly Ash from Fluidized Bed Combustion of Lignite

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The research problem was to determine the possibility of aqueous mineral carbonation using fly ash from lignite fluidized bed combustion. Both direct and indirect routes were used. The innovative nature of the research consisted of conducting experiments at atmospheric pressure and ambient temperature (20 °C). The synthetic gas mixture with composition analogical to the flue gas (nitrogen and up to 16 vol.% of carbon dioxide) was used. The experiments proved that almost all CO2 from the gas was chemically bound at pH > 12. The sequestration capacity of studied fly ash is about 55–76 g CO2 per 1 kg of ash in the case of the indirect method, and 80–95 g CO2 per 1 kg of ash for the direct route. These values are similar to those presented in the literature, but unlike most publications, they were obtained under ambient conditions, which can significantly reduce the costs of the process.

Metryczka

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