APPLYING OF ZEOLITES FOR THE ELEMENTARY SULPHUR OBTAINING FROM WASTING SULPHURCONTAINING GAS

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Utilization of wasting sulphurcontaining gas is one of the main problems of contemporary life. It makes a special trouble and has an international character in connection with ability of these toxic pollutions of transbordering transference by air.

In scientific-technical and patent literature there is single information about usage of natural zeolites in the process of obtaining the elementary sulphur out of wasting sulphurcontaining gas of non-ferrous metallurgic industries. In the present report we have stated the results of experiment, being obtained by reduction of sulphur dioxide by hydrogen on the natural and modified clinoptilolite out of Audag’s deposit (Az. Rep.). Experiments have been carried out in the flowing quartz reactor with the stationary catalyst layer. Reaction has been analyzed by chemical and chromatographic methods.

It has been studied the dependence of catalytic properties of natural clinoptilolite upon its concentration in the content of ion-exchange cations and structure, terms of preliminary thermo processing. It also has been defined, that catalytic properties of natural clinoptilolite mostly depend on concentration in the content of ion-exchange cations and structure. Increasing the degree of de-cationing of clinoptilolite up to 77 per cent leads to reducing of sulphur outcome from 6 to 21 per cent (at 500°C). X-ray amorphous clinoptilolite doesn’t show any activation at 500°C (output of sulphur 2,2 %). If zeolites have powerful (as compared with initial form) Brenstedov acid centers, the output of sulphur is reduced. On the base of regularity, obtained while studying the activities of SiO₂, aluminium oxide, aluminium silicates, we can suppose, that mainly responsible for formation of sulphur are Lewis acid centers of catalyst.

Experimental results showed that the terms of preliminary thermo proceeding of natural clinoptilolite (by the air and by hydrogen after air) don’t influence its activity (besides, adsorbed in micropores water is extracted).