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ANALYSIS OF TRENDS IN THE DEVELOPMENT OF DEMULSIFICATION OF OIL AND COAL SYSTEMS

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The article discusses current trends in the creation of new, more efficient demulsifiers, as well as the use of local raw materials to reduce the cost of reagents. A systematisation of methods of destruction of oil and coal emulsions is proposed, which includes physicochemical, thermal, mechanical and combined approaches. Promising directions for the development of intelligent reagents are investigated, in particular, temperature-sensitive polymers that change their properties depending on temperature, CO_2-sensitive copolymers that change wettability under the influence of carbon dioxide, and pH-sensitive polymers that can regulate solubility and surface activity depending on the acidity of the environment. The article discusses a new class of demulsifiers known as 'green' reagents, which are environmentally friendly alternatives to traditional chemical compounds. These include biodegradable polymers such as polysaccharides and natural proteins, as well as surfactants of plant origin, such as saponins and lecithins. These compounds interact with the interfacial layer of the emulsion, reducing the surface tension and facilitating rapid phase separation. The application of nanomaterials for the destruction of coal tar emulsions stabilised by dust particles by destroying the interfacial film, adsorption on droplets and changing their wettability is analysed. Particular attention is paid to the use of cold demulsifiers in production environments, which reduces energy consumption for heating emulsions and increases the overall efficiency of the process. Cold demulsifiers effectively break down emulsions at low temperatures, reducing energy costs for heating. It has been established that they can be non-ionic polyesters or products of the reaction of ethylene oxide, propylene oxide and butylene oxide with m-diphenol. Colloidal asphaltenes make demulsification more difficult, since the demulsification temperature is lower than the temperature of asphaltene-resinous substances precipitation.

Keywords: coal blend, bursting pressure, petrographic characteristics, volatile substance yield, forecasting, coke quality.

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