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Processes of self-propagating high-temperature synthesis of ceramic pigments with spinel phase

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Abstract

We used the method of self-propagating high-temperature synthesis to synthesize iron, cobalt- and nickel containing pigments of spinel type. It has been established that during the synthesis aluminum oxidation proceeds stepwise: through aluminothermic reaction with the transition metal oxide and direct oxidation of aluminum. The composition of the compounds is confirmed by X-ray, infrared spectroscopy, thermogravimetric analyses, as well as light and scanning electron microscopy. We showed the effect of initial composition on the processes of structure formation, color and dispersion of pigments produced.