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# Influence of ultra-short cryomilling on the microstructural and magnetic properties of cobalt ferrite

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## Abstract

The impact of ultra-short milling at liquid nitrogen temperatures on structural and magnetic properties of cobalt ferrite ( $\text{CoFe}_2\text{O}_4$ ) powders has been explored for the first time. Cryomilling for only up to 9 minutes increases the coercivity of the isotropic powder from 139 to 306 kA/m (1.74 to 3.85 kOe) and results in its modifications comparable with milling for hours at room temperature. A thermal treatment of processed  $\text{CoFe}_2\text{O}_4$  enables further optimization of powder magnetic properties and leads to a high value of energy product ( $13.5 \text{ kJ/m}^3$ ) for the sample treated at 600 °C. Systematic studies, comprising analysis of structural and microstructural

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