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# PROGRAM and ABSTRACT





## The effect of partial substitution of Co for Zn and Ni on the frequency-bending properties of a magnetorheological elastomer based on cobalt ferrite particles

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Cobalt ferrite nanoparticles have emerged as versatile materials with promising applications across various fields due to their exceptional magnetic properties, including high saturation magnetization, robust chemical stability, and biocompatibility. These nanoparticles can serve as a basis for the development of magnetorheological elastomers, which find applications not only in biomedicine but also in robotics and energy harvesting.

Our research delves into the characterization of magnetorheological elastomers, at the beginning of which we examined the frequency properties of elastomers based on carbonyl iron particles [1]. Furthermore, we investigate the frequency properties of magnetorheological elastomers containing cobalt ferrite particles and variants with partial substitution of Co by Zn and Ni within a polymer matrix. In our experiments, nanoparticles ranging from 30 to 40 nm were incorporated into the polymer matrix at concentrations of approximately 16-17%.

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### References

- [1] Makarova L.A. et al. "Dynamic Magnetoelectric Effect of Soft Layered Composites with a Magnetic Elastomer", *Polymers* 2023, 15, 2262.