

# Brillouin light scattering study of Co<sub>2</sub>FeGe Heusler thin films

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Full-Heusler alloys are interesting due to their unique physical properties and potential applications in different science areas and technology. In addition, due to the possibility of demonstrating half-metallic ferromagnetic properties They can be useful spintronics and magnonics applications. Recently a lot of investigations were focused on Co<sub>2</sub>FeGe which is half-metallic ferromagnet with relatively high magnetization and high Curie temperature. It has been shown [1] that regulation of the technological conditions of film preparation allows change the structural, magnetic and magnetodynamical properties of polycrystalline films of Co<sub>2</sub>FeGe.

X-ray studies (Rigaku SmartLab diffractometer) confirmed epitaxial growth [110]CFG // [100]MgO. The films prepared at RT are tensile stressed in the film plane. The atomically ordered phase L21 was fair for the annealed samples and the samples deposited at elevated temperatures. The main difference from polycrystalline films studied earlier [1] is that the elevated temperature deposition does not improve the magnetic characteristics of the films.

All BLS measurements presented in this abstract were performed using a diode pumped, frequency doubled Nd : YVO<sub>4</sub> laser with a wavelength of 532 nm as a light source. The spin-waves behavior all of groups samples have been presented. There were two investigation parts. The first one is the dependence of BLS frequencies on different propagating wave vectors. The second is the dependence of BLS frequencies on the external magnetic field. Using this method, it was possible to find such important parameters as Ms, Aex, g which agrees with FMR analysis.

## References:

[1] Vovk A. et al. Control of Structural and Magnetic Properties of Polycrystalline Co<sub>2</sub>FeGe Films via Deposition and Annealing Temperatures // *Nanomaterials*. – 2021. – 11. – №. 5. – 1229.

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