Contribution ID: **21** Type: **Poster**

【632】Nonlinear spin-wave transport in the YIG nano-waveguides

Tuesday 5 September 2023 19:13 (1 minute)

We report the nonlinear spin-wave transport in the array of the ten and ninety 260 nm wide YIG nano-waveguides. A new method based on Ar+ ion beam etching was developed for the nano-waveguide fabrication using a positive CSAR resist as a hard mask. For generating and detecting spin waves, 2 μm wide microwave antennas spaced 5 μm apart are used. The propagating spin-wave spectroscopy is measured in Damon-Eshbach and backward volume configurations for different microwave powers to evaluate the efficiency of the nonlinear multimagnon scattering processes and compare it with the reference case of a continuous YIG film.

Theoretical Work

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Session Classification: Poster Session

Track Classification: Spintronics and Magnetism at the Nanoscale