

Abstract Submitted
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Surface sensitivity of the spin Seebeck effect in the Pt/YIG system AISHA AQEEL, IVAN J. VERA-MARUN, BART J. VAN WEES, THOMAS T.M. PALSTRA, Zernike Institute for Advanced Materials, University of Groningen — It is well-known that the surface plays an important role in the spin Seebeck effect (SSE) [1]. However the effect of mechanical treatment on the SSE has not been systematically studied yet. Here, we have investigated the influence of the interface quality on the SSE in a bilayer system of platinum and yttrium iron garnet (Pt/YIG). The surfaces of the YIG crystals are modified by different types of mechanical polishing before Pt deposition for different samples. We observed that the magnitude and magnetic field dependence of the SSE is strongly influenced by mechanical treatment of the YIG surface. No definite relation has been found between the SSE response and the sample roughness. However, we observe a direct correlation between the saturation magnetic field (H_{sat}) of the SSE and the roughness of sample, as the former increases by moving from soft toward coarse particle polishing. The change in the magnitude of H_{sat} can be attributed to the presence of a perpendicular magnetic anisotropy due to the treatment induced surface strain or shape anisotropy in the Pt/YIG system [2].

[1] G. E. W. Bauer, *et al.*, Nature Mater. **11**, 391, (2012).

[2] A. Aqeel *et al.*, J. Appl. Phys. **116**, 153705, (2014).

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