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**Magnetic properties of $Fe/FeSi_2/Fe_3Si$ trilayered films prepared by facing targets sputtering deposition**[1] KAZUYA ISHIBASHI, KAZUTOSHI NAKASHIMA, Department of Applied Science for Electronics and Materials, Kyushu University, KEN-ICHIRO SAKAI, Department of Control and Information Systems Engineering, Kurume National College of Technology, TSUYOSHI YOSHITAKE, Department of Applied Science for Electronics and Materials, Kyushu University — Whereas giant magnetoresistance and tunnel magnetoresistance films generally employ nonmagnetic metal and insulator spacers, respectively, we have studied $Fe_3Si/FeSi$ artificial lattices, in which $FeSi_2$ is semiconducting and its employment as spacers is specific to our research. For the formation of parallel/antiparallel alignments of layer magnetizations, the employment of ferromagnetic layers with different coercive forces is required. There have been few studies on the fabrication of Fe-Si system spin valves comprising ferromagnetic layers with different coercive forces. In this work, $Fe_3Si$ and Fe were employed as ferromagnetic layer materials with different coercive forces. $Fe/FeSi_2/Fe_3Si$ trilayered spin valve junctions by facing targets direct-current sputtering deposition combined with a mask method, and their electrical and magnetic properties were studied. An $Fe_3Si$ layer was epitaxially grown on Si(111) substrate as a bottom layer. After that, An Fe layer with a large coercive force was deposited as a top layer, posterior to a $FeSi_2$ layer being deposited. From magnetization curves measured by a vibrating sample magnetometer, it was confirmed that the parallel and antiparallel magnetization alignments of ferromagnetic layers are clearly realized.

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Kazuya Ishibashi
Department of Applied Science for Electronics
and Materials, Kyushu University

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