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Fermi level tuning of highly spin-polarized complex Heusler alloys via materials genome[1] SUDIP PANDEY, ABDIEL QUETZ, ANIL ARYAL, MICHAEL FRALAIDE, Southern IL Univ-Carbondale, TAPAS SAMANTA, Louisiana State University, Baton Rouge, KAMRAN MUNIRA, WILLIAM BUTLER, University of Alabama, Tuscaloosa, IGOR DUBENKO, Southern IL Univ-Carbondale, DIPANJAN MAZUMDAR, SHANE STADLER, Louisiana State University, Baton Rouge, NAUSHAD ALI, Southern IL Univ-Carbondale — Heusler alloys are the largest family of half-metals (100% spin polarized at the Fermi level) and most promising for spintronic device applications. Many half-metallic full-Huesler alloys are predicted from *ab-initio* calculations, but may or may not be experimentally realizable. Here, we present a novel strategy to utilize these predicted materials to tune the Fermi level of well-known, highly spin-polarized Heusler alloys. We start with the test sample of $[Co_2MnSi]_{1-x}[Co_2CrGe]_x$, and, by controlling the ratio of these materials, we were able to shift the Fermi level of Co_2MnSi. Experimentally, we study the structural and magnetic properties of such Heusler alloys by room temperature X-ray diffraction (XRD) and taking magnetization measurements; It was found that these complex combinations of materials are single phase even though some components (Co_2CrGe for example) might not be stable in bulk form alone.

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