Improving the thermoelectric properties of half-Heusler TiNiSn through inclusion of a secondary full-Heusler phase: Microwave preparation and Spark Plasma Sintering of TiNi\textsubscript{1+x}Sn

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Analytical conditions of microprobe analysis
Ti K\textsubscript{\alpha}, Ni K\textsubscript{\alpha}, and Sn L\textsubscript{\alpha} X-ray intensities were measured using LPET, LLIF, and LPET analyzing crystals. X-ray intensity maps were collected using 15 keV accelerating voltage with 100 nA of beam current. An area of 125\times 125 \mu m was traversed using continuous stage translation to create a 256\times 256 pixel map with a dwell time of 125 ms per pixel. Quantitative analysis was conducted at 15 keV accelerating voltage and 10 nA beam current. Ti K\textsubscript{\alpha}, Ni K\textsubscript{\alpha}, and Sn L\textsubscript{\alpha} intensities were measured on-peak for 20 seconds and 10 seconds off-peak either side of the peak to create a linear background interpolation.

Figure S1. SEM images of as-prepared TiNiSn, TiNi\textsubscript{1.06}Sn, and TiNi\textsubscript{1.15}Sn

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Figure S2. Microprobe images of TiNi$_{1+x}$Sn with $x = 0$, 0.04, 0.1, and 0.15.