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**Tailored Magnetostructural Transitions**[1] RADHIKA BARUA, FELIX JIMENEZ-VILLACORTA, DONALD HEIMAN, LAURA H. LEWIS, Northeastern University — Dominance of the surface atoms over the bulk atoms in nanoscaled magnetostructural systems may alter the ground state of the system and thereby change the transition character. Creation of a nanostructured magnetostuctural system was carried out via rapid solidification of $(FeRh)_5Cu_{95}$ to precipitate nanoscaled isolated FeRh precipitates in a Cu matrix upon annealing. Bulk FeRh has an abrupt antiferromagnetic - ferromagnetic transition around T =370 K. X-ray diffraction performed on the quenched $(FeRh)_5Cu_{95}$ alloy indicates only the presence of Cu of slightly expanded lattice parameter a=3.62 Å, with ferromagnetism confirmed at room temperature by SQUID magnetometry. Vacuum annealing at 200 °C causes a secondary phase to appear with an abrupt magnetic phase transition at $T_t$ = 130 K. Details of the magnetic behavior of this nanostuctured phase will be discussed.

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