# Effect of annealing on the magnetic state in Ni-doped FeRh alloys

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Nearly equiatomic FeRh alloys are well-known for an antiferromagnetic (AF) - ferromagnetic (FM) phase transition. The transition temperature $T_t$ in $Fe_{49}Rh_{51}$ can be lowered by Ni-doping; applied pressure broadens the AF region raising $T_t$ or induces an AF state in FM alloys [1]. $(Fe_{0.965}Ni_{0.035})_{49}Rh_{51}$ samples show AF or FM states depending on the heat treatment. Long term annealing and quenching produce the AF state, whereas cooling at 1 K/min results in the FM state. SEM and XRD analyses show FCC phase precipitates additionally to the main CsCl-type phase. The precipitates cause expansion of the AF region [2]. An explanation of this could be the strain on the phase boundaries due to the higher density of the FCC phase.

**References:**

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