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Structural disorder study of d- and f-metals close to ferromagnetic quantum critical point JEAN-GUY LUSSIER, ADANE GEBRETSADIK, RUIZHE WANG, ALMUT SCHROEDER, Kent State University, Kent OH, KATHARINE PAGE, Spallation Neutron Source, Oak Ridge National Laboratory, Oak Ridge, TN — We present low temperature neutron diffraction data and pair distribution function analysis of two ferromagnetic alloys which can be driven to a paramagnetic phase by chemical substitution. Both series show indication that magnetic inhomogeneities like magnetic clusters play an important role for this magnetic quantum phase transition. All $Ni_{1-x}V_x$ polycrystalline samples up to $x = 15\%$ crystallize in a single phase, random alloy FCC structure. The increase of lattice constant and the atomic displacement parameter can be explained by a random occupation of V- and Ni-ions on the lattice with a radius ratio of 1.05. This is sufficient to explain the magnetic cluster formation. All polycrystalline $CePt_{1-x}Rh_x$ samples as well as $CePd_{1-x}Rh_x$ samples with $0.2 \leq x \leq 0.8$ crystallize in the CrB structure. The change of lattice constants and atomic displacement parameters towards higher $x > 0.5$ indicate a large variation in Ce-Rh bond lengths. This disorder is created by the different Ce neighbor atoms, indicating Ce is mixed valent. (experiments performed at LANSCE, Los Alamos National Laboratory and SNS, Oak Ridge National Laboratory)

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