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Neutron powder diffraction studies on $Ba_{1-x}A_xFe_2As_2$ (A=Na, K)[1] SEVDA AVCI, DUCK-YOUNG CHUNG, HELMUT CLAUS, STEPHAN ROSENKRANZ, RAY OSBORN, Argonne National Laboratory, OMAR CHMAISSEM, Northern Illinois University and Argonne National Laboratory, MERCOURI KANATZIDIS, Northwestern University and Argonne National Laboratory, EUGENE GOREMYCHKIN, ISIS, Rutherford Appleton Laboratory, UK — In the so-called 122 iron pnictide superconductors, the SDW is suppressed and superconductivity can be induced by various means including charge doping, pressure, and isovalent substitution. Using neutron powder diffraction and SQUID magnetization measurements, we have investigated the effects of both potassium and sodium substitution on superconductivity, structural transformation and magnetic ordering in $Ba_{1-x}A_xFe_2As_2$(A=K,Na) producing detailed phase diagrams of both systems. We present a comparison of the similarities and differences in the various internal atomic and magnetic structural parameters as a function of temperature and composition of these two hole-doped systems.

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