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Structural changes in pressure induced superconducting $BaFe_2As_2$: Similarities to chemical doping SIMON KIMBER, Helmholtz-Zentrum Berlin fur Materialien und Energie (HZB), ANDREAS KREYSSIG, Ames Laboratory, US DOE, Iowa State University, Ames, IA 5001, USA, FABIANO YOKAICHIYA, DIMITRI ARGYRIOU, Helmholtz-Zentrum Berlin fur Materialien und Energie (HZB), JIAQIANG YAN, Ames Laboratory, US DOE, Iowa State University, Ames, IA 5001, USA, THOMAS HANSEN, Institute Max von Laue-Paul Langevin, 6 rue Jules Horowitz,, TAPAN CHATTERJI, JCNS, Forschungszentrum Julich Outstation at Institut Laue-Langevin, ROBERT MCQUEENEY, PAUL CANFIELD, ALAN GOLDMAN, Ames Laboratory, US DOE, Iowa State University, Ames, IA 5001, USA — We have determined the crystal structure of $BaFe_2As_2$ as a function of temperature (4−150 K) and pressure (0−6 GPa) using neutron powder diffraction. The structural features important to superconductivity, namely suppression of the T−O phase transition and reduction in the As−Fe−As bond angle and Fe−Fe distance, show exactly the same behaviour under pressure up to the optimal T_C value, as found in chemically doped samples. This result suggests that chemical doping and pressure have similar effects on the electronic degrees of freedom in this family of iron pnictide superconductors.

Simon Kimber
Helmholtz-Zentrum Berlin fur Materialien und Energie (HZB)

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