

Abstract Submitted  
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**Structural phase transition above the superconducting dome in Co-substituted  $\text{BaNi}_2\text{As}_2$** <sup>1</sup> SANGJUN LEE, GILBERTO DE LA PENA MUNOZ, STELLA SUN, Univ of Illinois - Urbana, CHRIS ECKBERG, DANIEL CAMPBELL, TYLER DRYE, HYUNSOO KIM, PETER ZAVALIJ, PHIL PICCOLI, Univ of Maryland-College Park, JEFF LYNN, NIST Gaithersburg, JOHN-PIERRE PAGLIONE, Univ of Maryland-College Park, PETER ABBAMONTE, Univ of Illinois - Urbana —  $\text{BaNi}_2\text{As}_2$  is a Ni-pnictide superconductor ( $T_c \sim 0.7\text{K}$ ) which also shows a first-order tetragonal to triclinic structural phase transition ( $T_s \sim 135\text{K}$ ). With cobalt substitution, resistivity measurements show that the structural phase transition is suppressed as a dome shaped superconducting phase emerges. Using x-ray reciprocal space mapping, we present a direct measurement on the structural phase transition of  $\text{Ba}(\text{Ni}_{2-x}\text{Co}_x)_2\text{As}_2$  ( $x=0, 0.15, 0.3$ ). In contrast to the undoped ( $x=0$ ) system, which shows a small hysteresis, the optimally doped ( $x=0.15$ ) system with highest  $T_c \sim 2.5\text{K}$  exhibits a coexistence of tetragonal and triclinic phase over a wide range of temperature from 75K to 15K. This result implies a strong correlation between the structural instability and superconductivity.

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