Local Structure and Site Occupancy in Cd- and Hg-doped CeTIn₅ 
(T=Co, Rh, Ir) C.H. BOOTH, Lawrence Berkeley National Laboratory, E.D. BAUER, F. RONNING, V. SIDOROV, T. PARK, J.D. THOMPSON, J.L. SARRAO, Los Alamos National Laboratory, A.D. BIANCHI, Z. FISK, UC Irvine — Local structure measurements using the extended x-ray absorption fine-structure (EXAFS) technique were performed from the In K, Cd K, and Hg L₃ edges on samples of CeCo(In₁₋ₓCdₓ)₅ (0.5% ≥ x ≥ 3.1%) and CeT(In₁₋ₓHgₓ)₅ (T=Co, Rh, Ir, 0.7% ≥ x ≥ 3.5%). Fits indicate no measurable change in the bulk local structure with these substituents. In contrast, the local structure data around the substituent atoms indicates about \( f_{Cd}^{Co} = 44(3)\% \) of Cd atoms reside on In(1) sites, similar to previous results \( f_{Sn}^{Co} = 55(5)\% \) for Sn in CeCo(In₁₋ₓSnₓ)₅. Mercury has an even stronger preference for the In(1) site, with \( f_{Hg}^{Co} = 71(5)\% \), \( f_{Hg}^{Rh} = 97(3)\% \), and \( f_{Hg}^{Ir} = 55(5)\% \), although other phases appear to be present in the CeIr(In₁₋ₓHgₓ)₅ material. Small distortions from the parent structure are also observed around the substituent atoms. These results will be related to the sharp decrease in the superconducting transition temperature with \( x \).