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Tunable Thermal Expansion Behavior in the Intermetallic YbGaGe FIVOS DRYMIOTIS, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, YONGJAE LEE, Physics Department, Brookhaven National Laboratory Upton, New York 11973, GAVIS LAWES, JASON LASHLEY, TSUYOSHI KIMURA, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, STEVEN SHAPIRO, Physics Department, Brookhaven National Laboratory Upton, New York 11973, ALBERT MIGLIORI, VICTOR CORREA, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, ROBERT FISHER, Lawrence Berkeley National Laboratory, University of California, Berkeley, California 94720
— We investigate the effects of carbon and boron doping on the thermal expansion in the hexagonal ($P6_3/mmc$) intermetallic YbGaGe. While the pure YbGaGe samples exhibit positive thermal volume expansion- $(V_{300K}\text{-}V_{10K})/V_{300K} = 0.94\%$, the volume expansion in the lightly C- and B-doped samples dropped in half. Such a strong response with such light doping suggests that the underlying mechanism for the reported zero volume expansion is substitutional disorder, not the proposed magnetic behavior. This research proceeded under the auspices of the National Science Foundation, the State of Florida, and the U. S. Department of Energy. Research carried out in part at the NSLS at BNL is supported by the U.S. DoE (DE-Ac02-98CH10886).

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