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Search for superconductivity in ternary chalcogenides $Bi_2Rh_3S_2$[1]
UDHARA KALUARACHCHI, WEIWEI XIE, QISHENG LIN, VALENTIN TAUFOUR, SERGEY BUD'KO, GORDON MILLER, PAUL CANFIELD, Ames Laboratory/ Iowa State University — Recently Sakamoto and co-workers reported[1] that parkerite-type $Bi_2Rh_3Se_2$ is a new superconducting ($\sim$0.7 K) compound with the charge density wave ($\sim$250 K) behavior. In this work we present the physical properties of iso-structural compound[2] $Bi_2Rh_3S_2$. For the first time we have been able to grow single crystals of $Bi_2Rh_3S_2$ and separate them from excess melt via high temperature decanting. We will present the detailed characterization of $Bi_2Rh_3S_2$ and a new, closely related phase by mean of resistivity, magnetization, specific heat and single crystals diffraction measurements.

[1] T. Sakamoto, M. Wakeshima, Y. Hinatsu, and K. Matsuhira, Phys. Rev. B **75**, 060503 (2007)
[2] S. Natarajan, G. Rao, R. Baskaran, and T. Radhakrishnan, Journal of the Less Common Metals **138**, 215 (1988)

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Udhara Kaluarachchi
Ames Laboratory/ Iowa State University

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