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## **The thermal conductance at the interfaces of diamond, silicon, or germanium crystals and a copper heat sink with a gallium-indium eutectic as the heat transfer medium**

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A liquid gallium-indium eutectic has been extensively used in the synchrotron radiation community to improve thermal contact at solid-solid interfaces and also as a strain-free mount for crystal monochromators. However no direct information exists on the extent of the thermal contact resistance between the optics and the heat sink when liquid gallium-indium eutectic is used as a heat transfer medium. This quantity may be important in predicting the performance of crystal optics for high-heat-load applications. So, in order to provide quantitative data, we performed a series of measurements of the heat transfer coefficient across the joints between a copper heat sink and diamond, silicon, or germanium single crystals with liquid gallium-indium eutectic at the interface. A simple steady-state method was used and the measurements were done under vacuum. The experimental method will be described, and the results of the conductance measurements will be presented.

This work is supported by the U.S. Department of Energy, BES-Materials Sciences, under contract No. W-31-109-ENG-38.