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Search for new superconductors in rare-earth silicide systems[1] ALI BASARAN, JOSE DE LA VENTA, IVAN K. SCHULLER, University of California, San Diego, TED GRANT, ZACHARY FISK, University of California, Irvine — We have searched for the presence of superconductivity in the RE_5Si_3 system doped with C or B as a light element (RE: La, Ce, Pr, and Eu). High temperature superconductors and RE_5Si_3 systems have some common properties. Both systems have a layered tetragonal crystal structure. They are multi-element compounds and are also doped with a light element to introduce the superconductivity. In this study, multiphase bulk samples were made using arc-melting. Phase spread alloy thin films were also prepared in a sputtering system. We used magnetic field modulated microwave absorption spectroscopy (MFMMS), which is a very sensitive contactless technique to detect superconductivity, as the first screening for the existence of superconductivity in an inhomogeneous sample. We will present some of our results from MFMMS and SQUID measurements and compare them with structural refinement from X-Ray data.

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