Abstract Submitted
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Crystal-growth
Underground Breeding Extra-sensitive Detectors[1] DONGMING MEI, The University of South Dakota, CUBED COLLABORATION — CUBED (Center for Ultra-Low Background Experiments at DUSEL) collaborators from USD, SDSMT, SDSU, Sanford Lab, and Lawrence Berkeley National Laboratory are working on the development of techniques to manufacture crystals with unprecedented purity levels in an underground environment that may be used by experiments proposed for DUSEL. The collaboration continues to make significant progress toward its goal of producing high purity germanium crystals. High quality crystals are being pulled on a weekly basis at the temporary surface growth facility located on the USD campus. The characterization of the grown crystals demonstrates that the impurity levels are nearly in the range of the needed impurity level for detector-grade crystals. Currently, the crystals are being grown in high-purity hydrogen atmosphere. With an increase in purity due to the zone refining, the group expects to grow high-purity crystals by the end of 2011. The one third of the grown crystals will be manufactured to be detectors; the remaining will be fabricated in to wafers that have large applications in electro and optical devices as well as solar panels. This would allow the research to be connected to market and create more than 30 jobs and multi millions revenues in a few years.

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