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New, Innovative Method for Accurate Cleaving of Samples with Single Crystal Substrate

Authors: Efrat Moyal, Janet Teshima – LatticeGear LLC

Abstract

Scribing and Cleaving as a sample preparation method for single crystalline material and some amorphous materials is ubiquitous. Unlike any other technique, it doesn't expose the sample to any contamination and most importantly, nothing is lost, the sample cleaves into 2 parts. The most common, basic cleaving technique doesn't require expensive equipment and is completed in a couple of minutes is the 2-step process, first scribing the sample surface - edge and then cleaving it using a pin and fingers. However, this method poses a couple of disadvantages, such as low accuracy, limited cleave line straightness, requires a highly skilled person and limited to certain sample size and types. This drove many to adopt alternative methods even though prep time is longer, equipment costly, requires consumables and at times, lesser quality. This poster presents an innovative, new cleaving device that extends the benefits of the common manual cleaving method while overcoming many of its disadvantages. We propose to greatly increase the value of the cleaving method to the overall sample preparation workflow. This new device incorporates 2 fundamental elements. First, replacing the human vision with high magnification camera (integrated with SW) to run the entire process under high magnification. The second, replacing the fingers / hands coordination with precision knobs. As a result, every user can cleave accurately and precisely with high quality. A wide range of samples can be prepared in a couple of minutes at a low cost.