

## **Long-term laser ablation system stage return accuracy: sub-micron performance in real applications**

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Mineral grain analysis, in particular zircon analysis, is a common application for LA-ICP-MS and the theory and methodology are well established. The high throughput nature of the analysis requires the accuracy of manual ablation and the speed of hands-off automated analysis, however, to run in this manner for hours or even days significant confidence is needed that all ablations will run in the precise locations intended. An error of a few microns can result in ablation occurring in the grain rim, which is frequently a difference age to the core, ruining the analysis and wasting a valuable sample. ESI has met this challenge through evolution in sample chamber and stage design that have lead to improvements in short and long term stage accuracy. The most significant of these is ImageLock, a software-based feature which has been shown in controlled conditions to give long term stage return accuracy of  $<1 \mu\text{m}$ . Proving the performance in real laboratory conditions over a long analytical run on a real sample is important in benchmarking the performance of the NWR platform.