Laser-Cooled Lithium Atoms: A New Source for Focused Ion Beams

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GOAL
To adapt NIST's patented, laser-cooled Magneto-Optical Trap Ion Source (MOTIS) to provide ions for a focused ion beam (FIB) capable of non-destructive imaging.

KEY ACCOMPLISHMENTS
Designed and constructed a laser-cooled, magneto-optical trap-based lithium ion source mounted on a commercial focused ion beam system, creating the world's first lithium ion microscope.

Demonstrated that the light mass and low surface sputtering rate of laser-cooled lithium allows for non-destructive imaging with a characteristic focal spot size of < 30 nm.

REFERENCE