



Showcasing research from Intensity Particle Beam and Laser Laboratory, Department of Nuclear Physics, China Institute of Atomic Energy, Beijing, China.

Effect of liquid-sheet jet flow velocity on lithium detection sensitivity in aqueous solutions *via* laser-induced breakdown spectroscopy

This work demonstrates a liquid-sheet jet LIBS method to enhance in-situ detection sensitivity of Li in aqueous solutions by optimizing jet flow velocity. High-speed imaging and spectroscopic analysis reveal a 12.47 m/s flow maximizes plasma lifetime, electron density and excitation temperature, yielding a Li LOD of 0.15 mg/L—suitable for pressurized water reactor coolant monitoring—without sampling or pre-treatment. The approach improves signal stability and SNR, is applicable to other elements, and suggests paths for further sensitivity gains in nuclear and industrial liquid monitoring.

Image reproduced by permission of Yuwei Tian, Zhixing Gao, Yuanhang Wang, Zhao Wang, Zhenlin Hu, Linyuan Cao, and Hongzhi Cheng from *J. Anal. At. Spectrom.*, 2026, **41**, 971.

As featured in:



See Zhixing Gao, Yuanhang Wang *et al.*, *J. Anal. At. Spectrom.*, 2026, **41**, 971.