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Authors

Schenkel, T.

Kraemer, A.

Persaud, A.

et al.

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Extraction of Highly Charged Ions from the Electron Beam Ion Trap at LBNL for Applications in Materials Science and Surface Analysis

T. Schenkel, A. Kraemer, A. Persaud, J. W. McDonald, J. P. Holder, A. V. Hamza, K. N. Leung, and D. Schneider

E. O. Lawrence Berkeley National Laboratory, Berkeley, CA, USA

Lawrence Livermore National Laboratory, Livermore, CA 94550, USA

In our presentation we will describe the Electron Beam Ion Trap (EBIT) facility which is now operated at Lawrence Berkeley National Laboratory after transfer from Lawrence Livermore National Laboratory. The EBIT is designed for electron beam energies of 4 to 30 keV. We will report progress in ion source development and beam transport improvements aimed at the formation of focused beams of highly charged ions. Requirements on ion source performance and beam parameters (beam currents, and beam energy spreads) for the application of highly charged ions (e. g., Xe⁴⁴⁺ at a kinetic energy of ~2 keV/u) in surface analysis and materials science [1, 2].

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References

- [1] A. V. Hamza et al., Rev. Sci. Instr. 71, 2077 (2000)
- [2] T. Schenkel et al, Prog. Surf. Sci. 61, 23 (1999)