

The Dresden EBIT: a novel source of x-rays from highly charged ions[†]

**U. Kentsch,¹ S. Landgraf,¹ G. Zschornack,^{1*} F. Grossmann,² V. P. Ovsyannikov²
and F. Ullmann²**

¹ Technische Universität Dresden, Institut für Kern- und Teilchenphysik, Mommsenstrasse 13, D-01069 Dresden, Germany

² Leybold Vakuum Dresden GmbH, Zur Wetterwarte 50, D-01109 Dresden, Germany

Received 14 October 2002; Accepted 27 June 2003

The Dresden EBIT, a source of highly charged ions, is based on electron impact ionization of primarily neutral atoms in a high-density electron beam. Inside the source x-radiation originates from direct excitation, radiative recombination and dielectronic recombination processes. Since the energy of the exciting electrons is tunable, specific atomic states can be prepared for particular investigations. The intensity of the x-ray flux allows the realization of energy- and wavelength-dispersive x-ray spectrometry of highly charged ions. Spectra of helium- and hydrogen-like titanium and zinc ions are shown as examples. Copyright © 2004 John Wiley & Sons, Ltd.