Frontiers in Research with Highly Charged Ions

JOHN GILLASPY, JOSEPH TAN, JOSHUA POMEROY, NIST, NIST EBIT TEAM — At the 85th Nobel Symposium in 1992, Joe Sucher remarked that a significant part of atomic physics was entering a new era, which he termed “the ion age” [1]. He gave special mention to highly charged ions, which, at the time, were becoming a more feasible topic of investigation because of advances in methods to produce and control them. During the past decade, these, and additional advances, have spawned a host of emerging applications for highly charged ions in areas as diverse as microelectronics and biomedicine. I will present some recent examples involving the NIST Electron Beam Ion Source/Trap (EBIS/T) to illustrate present and future opportunities for both fundamental and applied research with highly charged ions. [1] J. Sucher, Phys. Scr. T46, 239 (1993).