

Development of RIKEN 18 GHz ECRIS, J. ÄRJE*, T. CHIBA, A. GOTO, M. HEMMI, E. IKEZAWA, N. INABE, T. KAGEYAMA, O. KAMIGAITO, M. KASE, Y. MIYAZAWA, T. NAKAGAWA, and Y. YANO, RIKEN, Japan - We constructed and tested a new 18 GHz ECRIS as an ion source of the new injector system of RIKEN Heavy Ion Linear Accelerator to increase the beam intensities of multicharged heavy ions. We successfully produced intense beam of multi-charged heavy ions from gaseous elements (e.g. 160 eμA of Ar¹¹⁺, 130 eμA of O⁷⁺) at relatively low RF power (600 W) at the extraction voltage of 15 kV. For the production of metallic ions, we have chosen the MIVOC method. In the case of Fe ions, we used Ferrocene (Fe(C₅H₅)₂). Using this method, 150 eμA of Fe¹⁰⁺, and 100 eμA of Fe¹³⁺ were stably extracted from the ECRIS at the extraction voltage of 15 kV. We also observed that the beam intensities of highly charged and heavier ions were strongly enhanced using an afterglow mode (e.g. 250 eμA of Fe¹¹⁺, 200 eμA of Fe¹³⁺, 30 eμA of Kr²³⁺).

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