Compact RF Ion Source for Industrial Electrostatic Ion Accelerator

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KOMAC (KOrea Multi-purpose Accelerator Complex) is developing a single-ended electrostatic ion accelerator to irradiate gaseous ions, such as hydrogen, nitrogen, etc., on materials for industrial applications. The maximum accelerating voltage is 1 MV, and the maximum beam current is 10 mA. For the high-voltage power supply that should be robust and capable for high-current operation, ELV (electron accelerator from Budker Institute of Nuclear Physics, Novosibirsk, Russia) type has been selected. An ion source is installed in the high-voltage terminal in high-pressure tank of sulphur hexafluoride insulating gas. Because of the limited space and the limited electrical power (<500 W) in the high-voltage terminal, the ion source should be compact and electrically efficient. The 200-MHz RF ion source has been developed for this purpose. In this conference the result of the development will be presented.

Acknowledgement
This work has been supported through KOMAC operation fund of KAERI by MSIP (Ministry of Science, ICT and Future Planning).