

A 150 kV Highly Charged Ions Research Platform in Shanghai

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Synopsis A highly charged ions platform based on 14.5 GHz ECRIS has been constructed at Fudan University for atomic, molecular, plasma and material scientific research. The accelerating voltage for the ions has reached 150 kV.

The studies of the interaction between highly charged ions (HCI) with atom, molecule and material has received a surge of interest over the past few decades not only in fundamental research but also in application field [1, 2]. The ECRs (electron cyclotron resonance source) as a highly charged ion source has been widely used in those fields of research. With a high voltage platform, the beam energy could be up to hundreds qkeV.

Recently, a highly charged ions platform based on ECR ion source has been constructed at Fudan University. An all permanent magnet 14.5 GHz ECR ion source, delivered by Pan-techik in France, was installed on a high voltage platform (150 kV) to provide large currents of multiply charged ion beams. The operating frequency is 14.5 GHz with a maximum rf-power of 300 W. The base vacuum condition is 1.1×10^{-7} mbar at the extraction side during the run of the system. After the acceleration, the HCI beam was analyzed and charged stated selected using a 90 degree dipole magnet. The control of the platform are done by a host computer.

The gas element (H, C, N, O and inert gas) beams could be supplied.



Figure 1. A photo of the 150 kV HCI research platform.

References

- [1] H. Schmidt-boeking, *et al.* 2002 *AIP conference proceedings* [604 120](#)
- [2] X. Ma, *et al.* 2009 *J. Phys. Conf. Ser.* [163 012104](#)

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