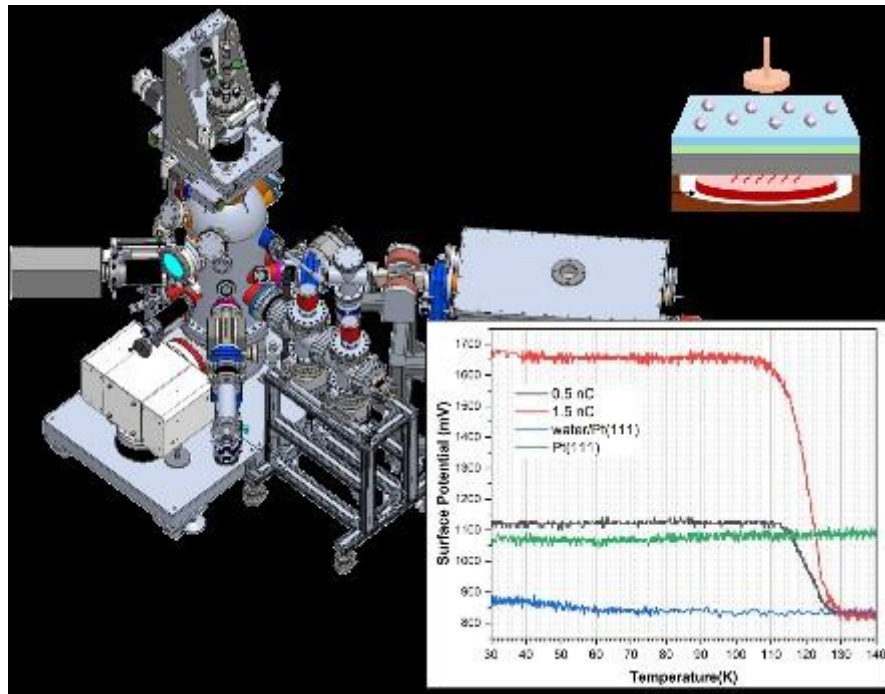


An Ion Soft-landing Apparatus

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An apparatus for explorations of ion transport in a medium and across an interface has been constructed. The ion soft-landing technique is used to deposit low-energy ions onto a pre-adsorbed medium layer on a metal substrate. The designed low-energy ion source can produce a mass-filtered ion beam with tens of nanoampere from solid sources such as bulk metals and salts. The kinetic energy of the ion beam can be lower than 1.0 eV, enabling the ions to be soft-landed onto the medium at the surface. A Kelvin probe with a resolution of less than 32 mV is incorporated to measure the surface potential (SP) variation of the ion-landed sample to monitor the ion transport process in the medium. Temperature-programmed SP measurements on an Ag^+ -adsorbed ice film prepared on Pt(111) reveal that the temperature threshold for the Ag^+ -induced SP change of the ice film is about 110 K. The apparatus performance demonstrates its potential in studies of ion transport and related phenomena at both macroscopic and microscopic levels.



References

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