

Abstract Submitted  
for the GEC16 Meeting of  
The American Physical Society

**Control of ion energy distributions in inductively coupled ratio-frequency plasmas with a biased electrode**<sup>1</sup> CHAN XUE, WEI LIU, FEI GAO, YOU-NIAN WANG, School of Physics and Optoelectronic Technology, Dalian University of Technology, China — We measured the ion energy distribution (IED) and plasma density as a function of the voltage phase shift  $\varphi$  between the source and bias electrode in inductively coupled argon plasma driven at 13.56 MHz by using a retarding field energy analyzer and a commercial Langmuir probe, respectively. Our results demonstrate that under some certain discharge conditions, as the phase shift  $\varphi$  increases from 0 to  $2\pi$ , the plasma potential slightly decreases with  $\varphi$ , while the IED exhibits drastic changes in both the IED width and the energy of bimodal distribution. To be specific, as  $\varphi$  increases from 0 to  $\pi$ , the IED width increases and the bimodal distribution shifts to high energy region. However the IED width almost keeps constant and the bimodal distribution shifts to low energy region, when  $\varphi$  increases from  $\pi$  to  $2\pi$ .

<sup>1</sup>This work was supported by the National Natural Science Foundation of China (NSFC) (Grand Nos. 11335004,11205025, 11405019).

Chan Xue  
School of Physics and Optoelectronic Technology, Dalian University of Technology, China

Date submitted: 10 Jun 2016

Electronic form version 1.4