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## Low Z Gas Mixing Effects on Ar and Xe Multicharged Ion Beams in Electron Cyclotron Resonance Ion Source

Electron Cyclotron Resonance Ion Source (ECRIS) has wide applications such as cancer therapy and material synthesis. We have constructed a single ECRIS capable of producing various ions with low to high mass/charge ratio, and have been conducting various experiments. In this study, we focus on the efficient production of multicharged ions and aim at increase their ion beam currents by the new effects of electromagnetic and electrostatic waves in ECRIS. We investigate the possibility of selective heating to low Z ions during gas mixing. Therefore, as a preliminary step of above-mentioned experiments, the effects of gas mixing with rare gases (Xe and Ar) are investigated. We will add low Z gas under conditions of pressure and microwave power which the production of multicharged ions is maximized, and investigate the optimum the mixing ratio. We will try to estimate the root square emittance by the emittance measurements of the low Z ion beams.

### E-mail for contact person

k.tsuda@nf.eie.eng.osaka-u.ac.jp

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**Primary author:** TSUDA, Kazuki (Osaka Univ.)

**Co-authors:** OWADA, Issei; ANAN, Masahiro; HARISAKI, Shuhei (Osaka Univ.); KATO, Yushi; KUBO, Wataru; SATO, Koichi

**Presenter:** TSUDA, Kazuki (Osaka Univ.)

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