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## ECR Plasma Enhanced Sputtering and Applications

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We have developed an ECR plasma enhanced sputtering (ECRES) system which consisted of a rotary target with length of 1500 mm and two microwave launchers. In the previous work, ECR plasma sources were investigated and their magnetic field configuration were similar to conventional magnetron sputtering cathodes such as circular or linear types [1]. The results showed that the lab-scale ECR plasma sources could have stable plasmas with high density near the metal targets under low operating pressure less than 1 mTorr without any power at the metal targets. It means that the ECR plasma sources can decouple the power for plasma generation and the bias voltage for acceleration of ions onto the target surface. In the present work, the ECRES system has been developed, which has high magnetic field than the magnetic field of conventional rotary cathodes. The characteristics of plasmas and thin films have been studied. In this talk, first the concept and design of the ECRES system would be introduced, secondly, the characteristics of plasmas and thin films would be shown and finally, the application of oxide TFT would be discussed.

### REFERENCES:

[1] Kim et al. "Design and characterization of 2.45 GHz electron cyclotron resonance plasma source with magnetron magnetic field configuration for high flux of hyperthermal neutral beam", Rev. Sci. Instrum. Vol. 81, pp 083301, 2010.

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