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Experimental Investigation of Expandable Multiple Helicon Ignition with Permanent Magnets SANGHYUK AN, HONGYOUNG CHANG, KAIST — Helicon source is a promising source due to its higher density than other plasma sources. However, it not been widely used owing to its complex setup Although some helicon sources have been conducted to the industrial processing, they are not suitable for the process yet. However, since Chen developed a new concept of helicon source using permanent magnets, a possibility for a large-area processing is opened because of its simple setup and expandability. We have investigated the newly developed helicon source using annular permanent magnets with regard to the expandability. The higher resistance of helicon plasma than other sources makes several tubes ignite in same amount for the parallel ignition. The calculated resistance is compared with the measured one with VI-probe. We also compared the helicon plasma with ICP with respect to the resistance and the phase which affects the power coupling efficiency mostly. Helicon source gives higher resistance and lower phase than ICP A 4-tube multiple helicon source was built for a large area processing. The four tubes are in line and each source is 150 mm apart. Every tube is not turned on at low power; however, all tubes are ignited in the same amount as the input power increased. It means that the input power is distributed equally due to high resistance after the plasma is transferred from inductive to helicon mode. The uniformity is achieved by a Langmuir probe

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