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**Generation of high energy electron accelerated by using a tapered capillary discharge plasma** MINSEOK KIM, INHYUK NAM, TAEHEE LEE, SEUNGWOO LEE, HYYONG SUK, Gwangju Institute of Science and Technology — The tapered plasma density in a gas-filled capillary waveguide can suppress the dephasing problem in laser wakefield acceleration (LWFA). As a result, the acceleration distance and the gained electron energy are expected to be increased. For this purpose, we developed a tapered capillary waveguide, which can produce a plasma density of  $\sim 10^{18} \text{ cm}^{-3}$ . Using this capillary discharge plasma, we performed the acceleration experiments with the high power laser system (20 TW/40 fs) constructed at GIST. In this presentation, the detailed electron acceleration experiments will be reported.

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