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Parabolic Cross-Sectional Al_2O_3 Microcavity Devices: Volume Dependent Plasma Characteristics Optimization JE KWON YOON[1], BRIAN P. CHUNG[2], YEON JOON MOON[3], SUNG-JIN PARK[4], J. GARY EDEN[5], University of Illinois at Urbana-Champaign — Parabolic cross-sectional microcavity arrays having as small as 80 μm apertures have been reported [1]. As an electrode, $\sim$100 μm thick aluminum foil is used and wet chemical processes can reduce the thickness of the electrode as thin as 20μm, varying the volume of the plasma. Due to the controllable electrode height and the electrochemical method introduced previously, dynamic range of aspect ratio from 0.2 to 2.2 can be provided. Plasma volumes from 1.3 to 6.9 pm^3 are evaluated while the diameters of apertures are kept constant. Plasma characteristics such as Paschen's curve and emission spectrums in Ne and Ne/Xe are investigated below 700 torr. This study can be applied to devices for display.

[1] K. S. Kim, T. L. Kim, J. K. Yoon, S.-J. Park, and J. G. Eden, Appl. Phys. Lett., 94, 011503, 2009.

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