

IAF SPACE PROPULSION SYMPOSIUM (C4)
Interactive Presentations - IAF SPACE PROPULSION SYMPOSIUM (IPB)

Author: Mr. Chanearl Kwon
Seoul National University, Korea, Republic of, rnjscksdjf94@snu.ac.kr

DEVELOPMENT OF FEEP THRUSTER BASED ON ANNULAR-SLIT CONFIGURED TYPE
EMITTER WITH INDIUM PROPELLANT**Abstract**

Underlying physics of Taylor cone is very crucial for developing field emission electric propulsion (FEEP) thruster for micro-to-nano satellites' application for attitude control and orbit maintenance. This study conducts the experiments to calculate the slit height and the mean diameter of annular-slit emitter for developing the FEEP thruster. First, Taylor cone experiments are conducted using a linear-slit type emitter, which is the basic form of annular-slit type emitter, to calculate the suitable slit height, length, and voltage. Next, the results from the experiments and Taylor cone simulations are compared and verified. In addition, Taylor cone experiments and simulations using liquid indium are performed to calculate geometric parameters to be used in designing the actual FEEP thruster. Finally, verified results will be used in designing an engineering module of FEEP thruster.