Effects of Pyrex Insulator Length on Pinch Current in Argon-Filled Plasma Focus Device (TPF-1)

Jiraporn Promping[1], Thanet Kunamaspakorn[2], Roppon Picha[1], Nopporn Poolyarat[2], Thawatchai Onjun[3] and Yutthapong Pianroj[4]

[1]*Thailand Institute of Nuclear Technology, 16 Vibhavadi Rangsit Rd., Ladyao, Chatuchak, Bangkok, Thailand*

[2]*Department of Physics, Thammasat University, Pathumthani, Thailand*

[3]*Sirindhorn International Institute of Technology, Thammasat University, Pathumthani, Thailand*

[4]*Faculty of Sciences and Industrial Technology, Prince of Songkla University, Suratthani Campus, Suratthani, Thailand*

Thailand plasma focus 1 (TPF-1), a small dense plasma focus device with the energy ranged from 1.5 to 3 kJ, has been developed for educational and research purposes. This prototype device is intended to be a pulsed source of X-ray and neutrons. In this paper, we studied on the optimum length of the insulator sleeve that would improve the plasma pinch and minimize the cracking of the insulator. The insulator's length was calculated from the ratio of length sleeves insulated with radius distance between the electrodes for the Mather-type plasma focus device from the equation "$L_{ins} / (b-a)$" [1]. The cracking of the insulator was studied to evaluate its resistance to high voltage.

[1] H.R. Yousefi, et. al., *Physics Letters A* **361**, 360-363 (2007)