V CONCLUSION

From this short series of plasma focus experiment in three different pure gases : deuterium, argon and nitrogen, a number of points may be made here.

1. The cheap BPX-65 diode multichannel spectrometer with different aluminium absorption foils works reliably as an soft x-ray detector. It gives temporal signal of soft x-ray emission with good response.

2. Favre et.al.[5] observed two periods of soft x-ray activity in their experiment using hydrogen-argon mixture. Both periods corresponds to plasma compression, as indicated by sharp change in dI/dt signal. In most of our cases, up to three periods corresponding to successive plasma compression are observed. In dirty plasma condition, the third x-ray peak may be attributed to copper line radiation as no high voltage peak appears. The origin of copper line radiation, either from the anode or vaporised copper in plasma is yet to be studied.

3. Electron temperature (or x-ray energy) may be inferred from the intensity ratio of x-ray signal. For argon Te is ~1.5keV which is reasonable while Te for deuterium gas is rather high or erronous due to contribution of impurity radiation to Bremstrahlung radiation.

4. Hard x-ray with energy upto ~150kV is also observed.

It is suggested that more series of experiments be attempted in cleaner plasma condition, improved diagnostics to locate source of copper line radiation and electron beam emission [15]. Working the plasma focus with mixture of noble gases and hydrogen may lead to higher soft x-ray output for possible application in radiograph and lithography.