

THE GAS GAIN IONIZATION CHAMBER

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The applicability of the ionization chamber to gas gain measurements in He, N₂, Ar, CH₄ and in mixtures 0,1 CH₄ + 0,9 He and 0,1 CH₄ + 0,9 Ar, under pressures 0,5 atm to 5 atm, has been investigated.

The comparison of the present gas gain experimental data with theoretical gas gain values gave fairly good agreement for 0,1 CH₄ + 0,9 Ar mixture and pure CH₄ while this agreement was poor for pure He (Fig.1.).

From the practical point of view, the gas gain ionization chamber is suitable for measurement of low exposure rates and absorbed doses. No increase of the ionization chamber noise was detected with increasing the supply voltage, thus the signal noise ratio, and consequently chamber sensitivity, was increased by the gas gain factor.

The effect of space charge on gas gain at high exposure rates has also been studied (Fig.2.). At exposures of several R/h the effect of space charge on the gas gain became noticeable and at of several tens of R/h the gas gain decrease was drastic.

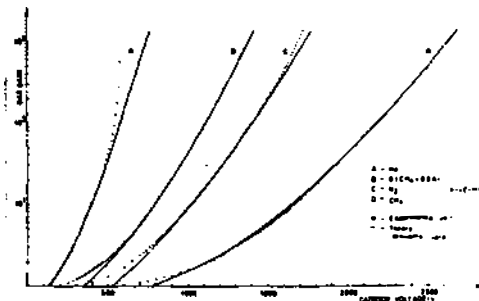


Fig.1.

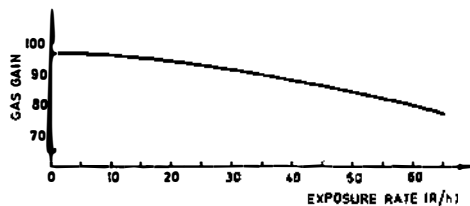


Fig.2.