

Abstract Submitted
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Photoelectron Track Length Distributions in CH_3OCH_3 and $\text{Ne}:\text{CO}_2:\text{NO}_2\text{CH}_3$ ZACHARY PRIESKORN, University of Iowa, JOANNE HILL, NASA GSFC USRA, PHILIP KAARET, University of Iowa, JOEL BLACK, NASA GSFC Rockwell Scientific — We have measured the photoelectron track length distribution in 190 Torr CH_3OCH_3 and 400 Torr $\text{Ne}:\text{CO}_2:\text{NO}_2\text{CH}_3$, partial pressures 300:80:20 Torr, using a Time Projection Chamber Polarimeter (TPC) and Negative Ion TPC Polarimeter (NITPC) respectively. The measurements were made at the Brookhaven National Laboratory National Synchrotron Light Source. Track length means range from 150 microns at 2.5 keV to 700 microns at 6 keV for CH_3OCH_3 and 150 microns at 3.0 keV to 700 microns at 7 keV. The track length mean vs energy was found to fit a powerlaw as reported for other gases. We found that for CH_3OCH_3 , $n=1.69$ and for $\text{Ne}:\text{CO}_2:\text{NO}_2\text{CH}_3$, $n=1.72$. This data has important implications for the design of the readout in future TPC's and NITPC's. TPC's and NITPC's for X-ray polarization were recently developed at NASA GSFC and a CH_3OCH_3 TPC will be the main instrument for the GEMS mission, a recently selected NASA SMEX.

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