

Status Report of Gas Studies at UVic

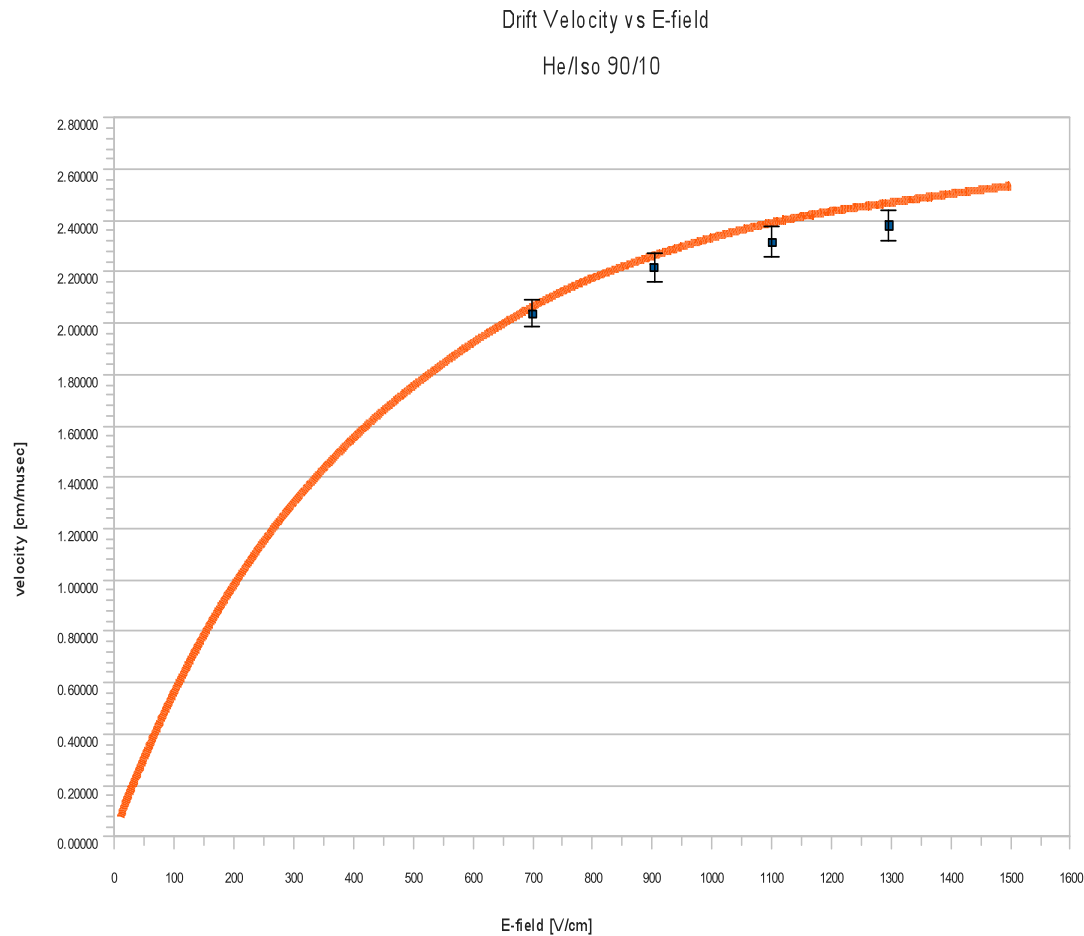
Mike Roney and Julia Franta
University of Victoria

SuperB DCH Meeting
Oct 6, 2009

Outline

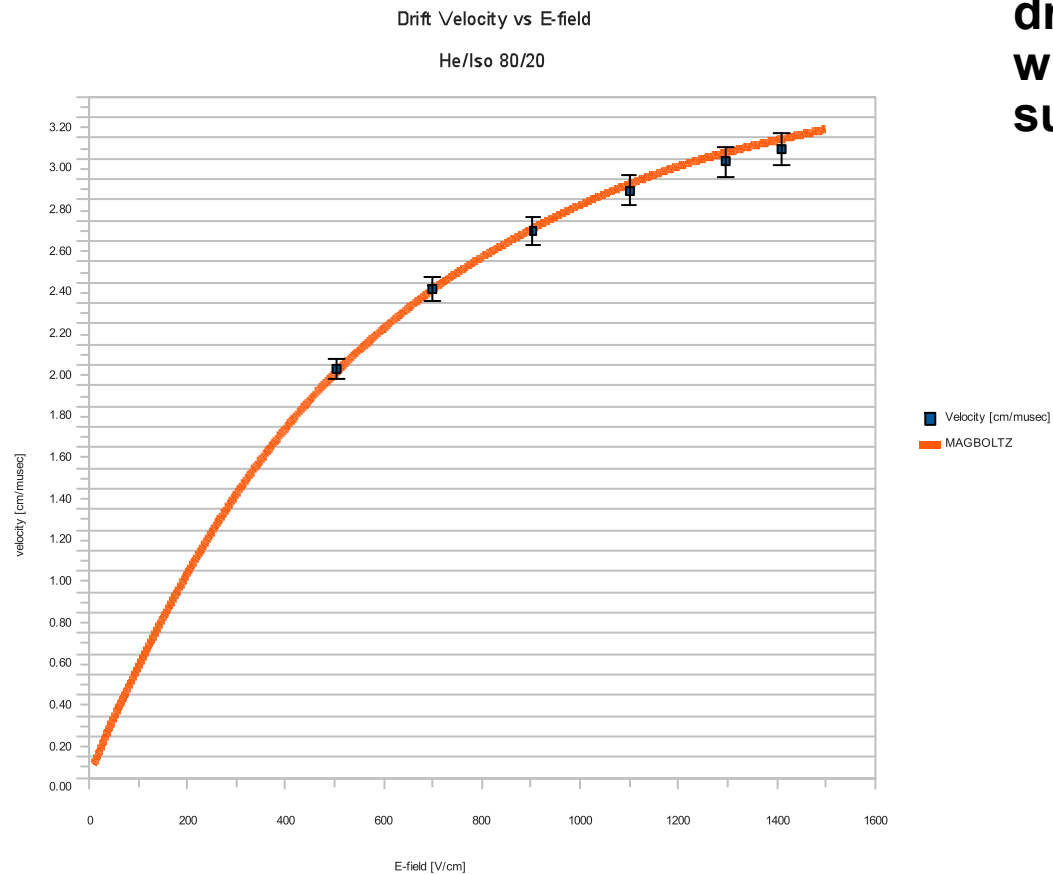
- Drift velocity measurements for He/Isobutane 90/10, 80/20, 70/30 and He/CF₄/Isobutane 75/10/15 comparison with magboltz
- First look at gain
- First look at diffusion using pulse shapes

He/Isobuane 90/10 velocity data cf magboltz



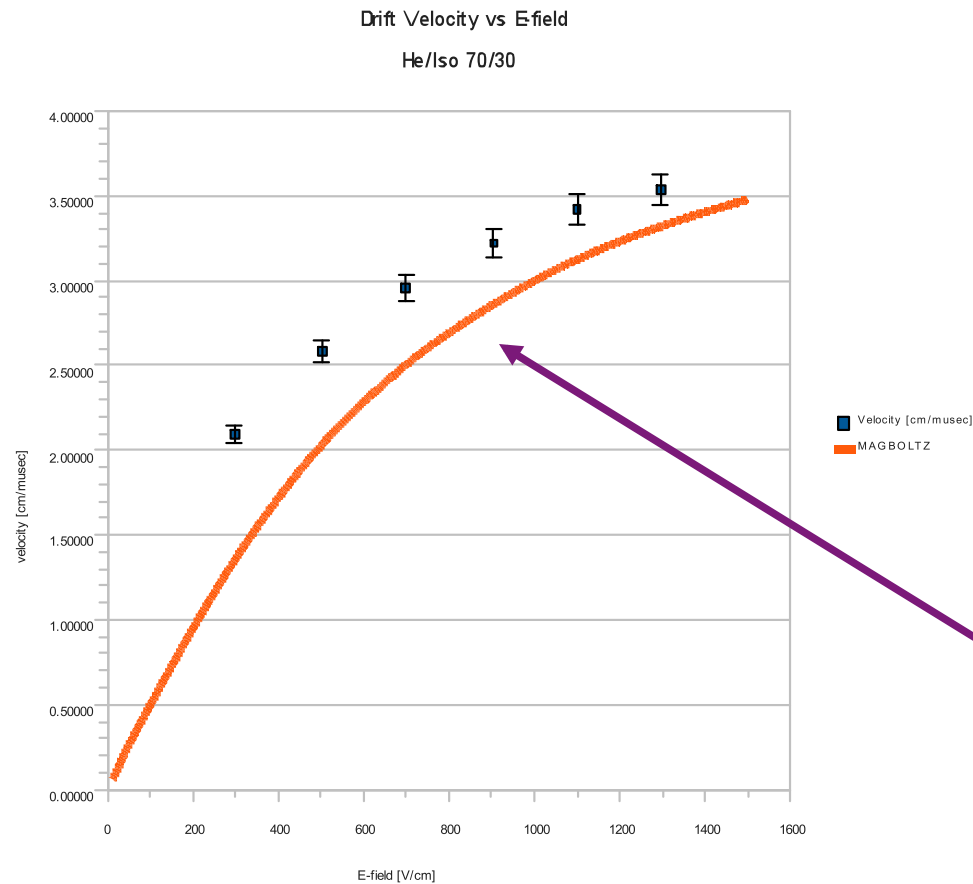
**drift velocity
with rise time
subtraction**

He/Isobutane 80/20 velocity data cf magboltz



**drift velocity
with rise time
subtraction**

He/Isobutane 70/30 velocity data cf magboltz

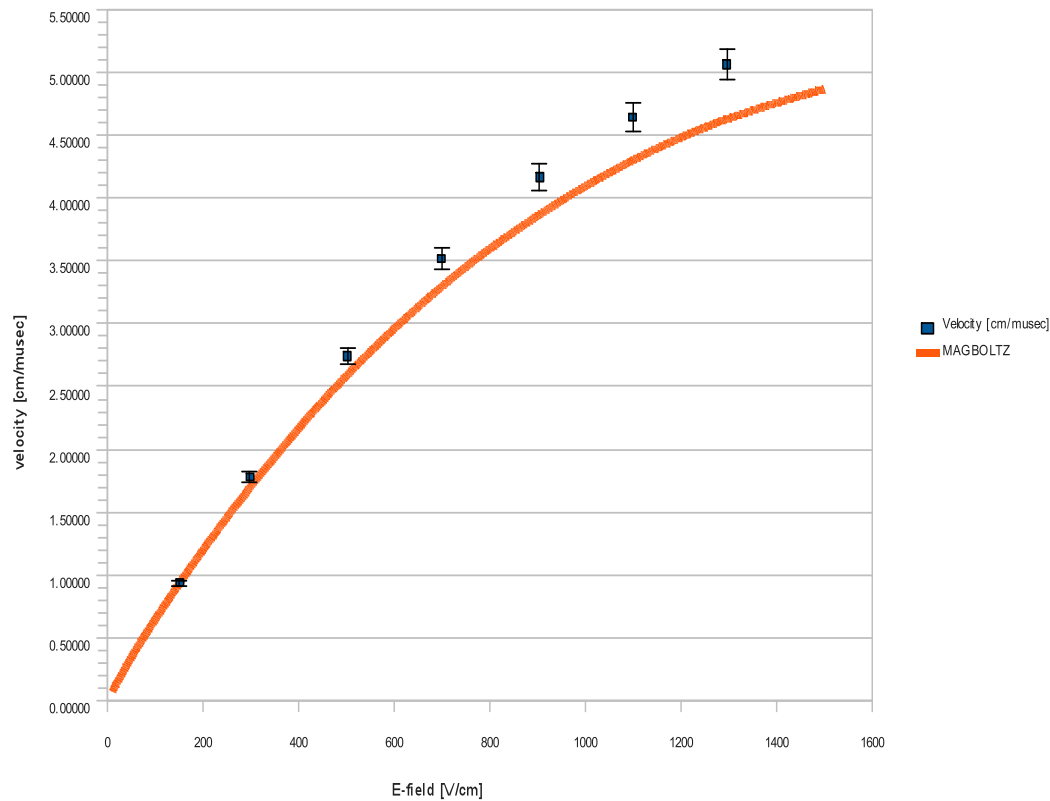


**drift velocity
with rise time
subtraction**

**Not water
Drift speed
would be less
than Magoltz**

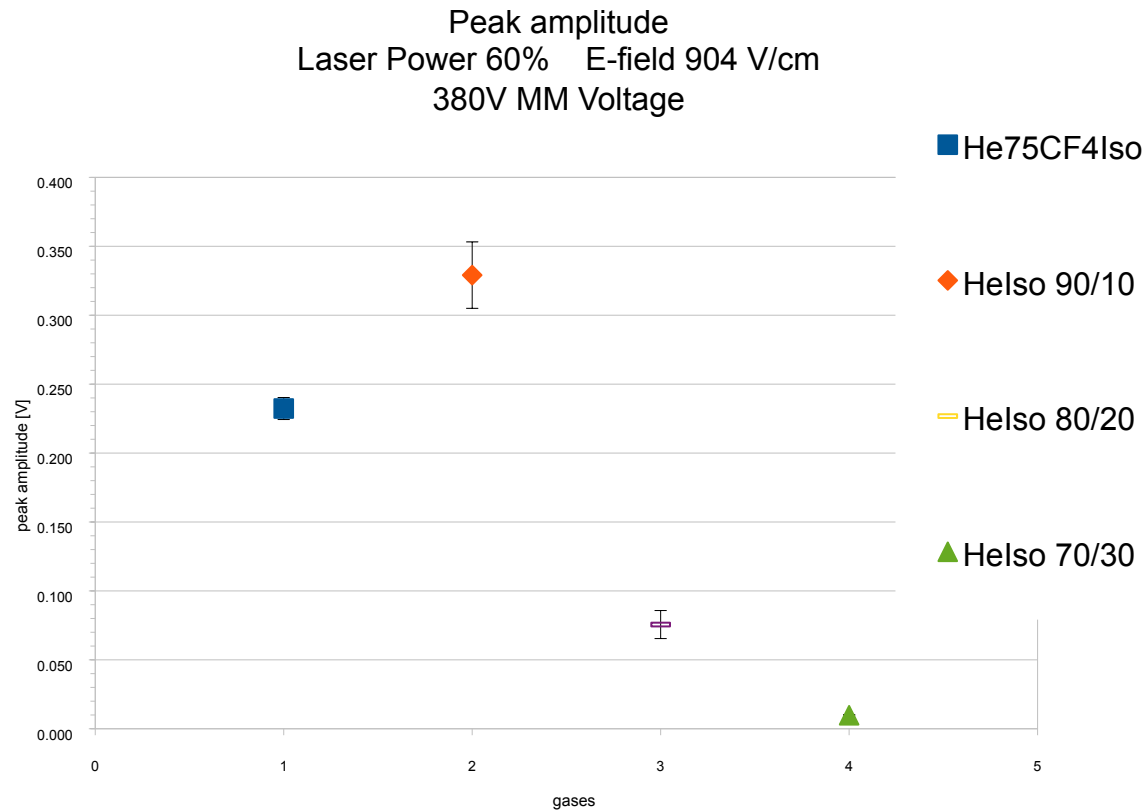
He/CF₄/Isobutane 75/10/15 velocity data cf magboltz

Drift Velocity vs E-field
He/CF₄/Iso 75/10/15

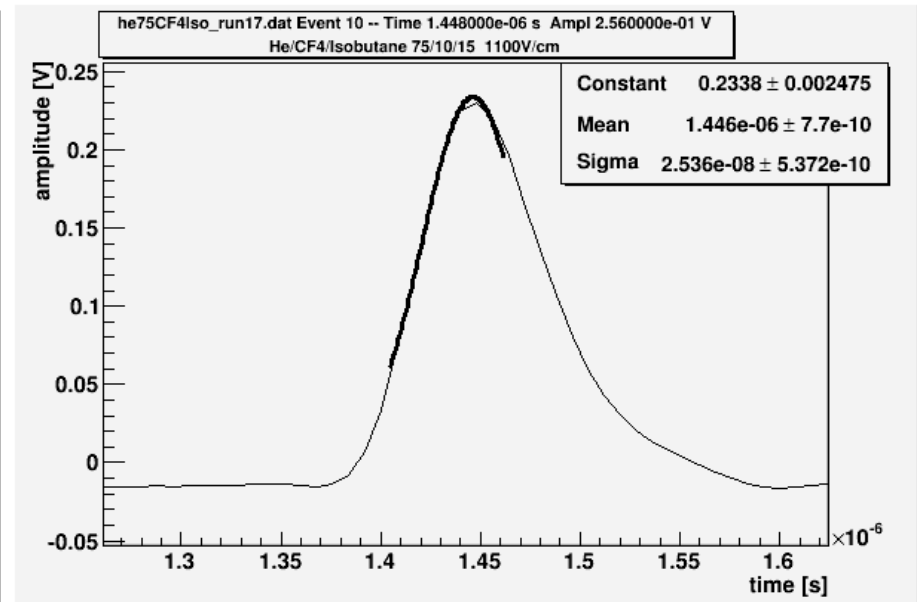
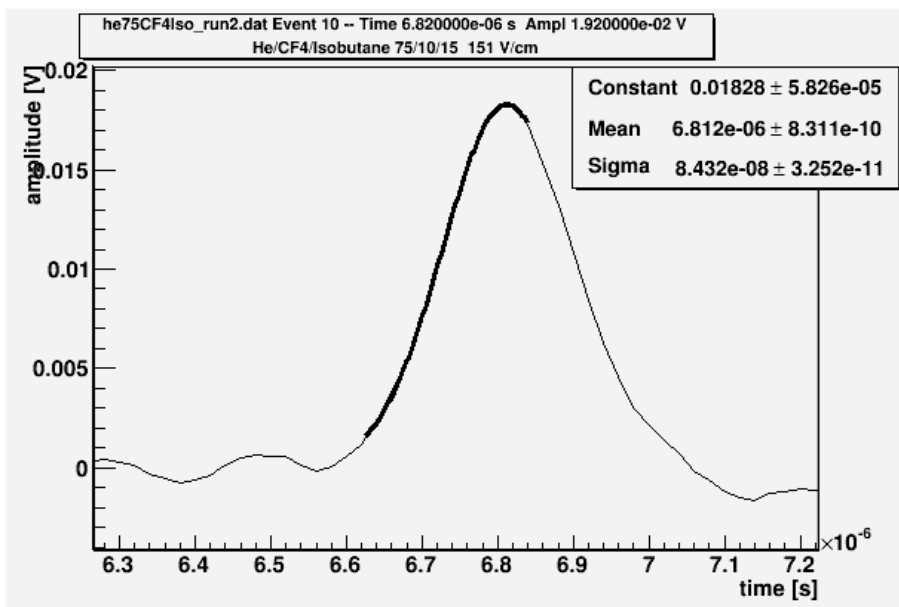


**drift velocity
with rise time
subtraction**

Relative gains

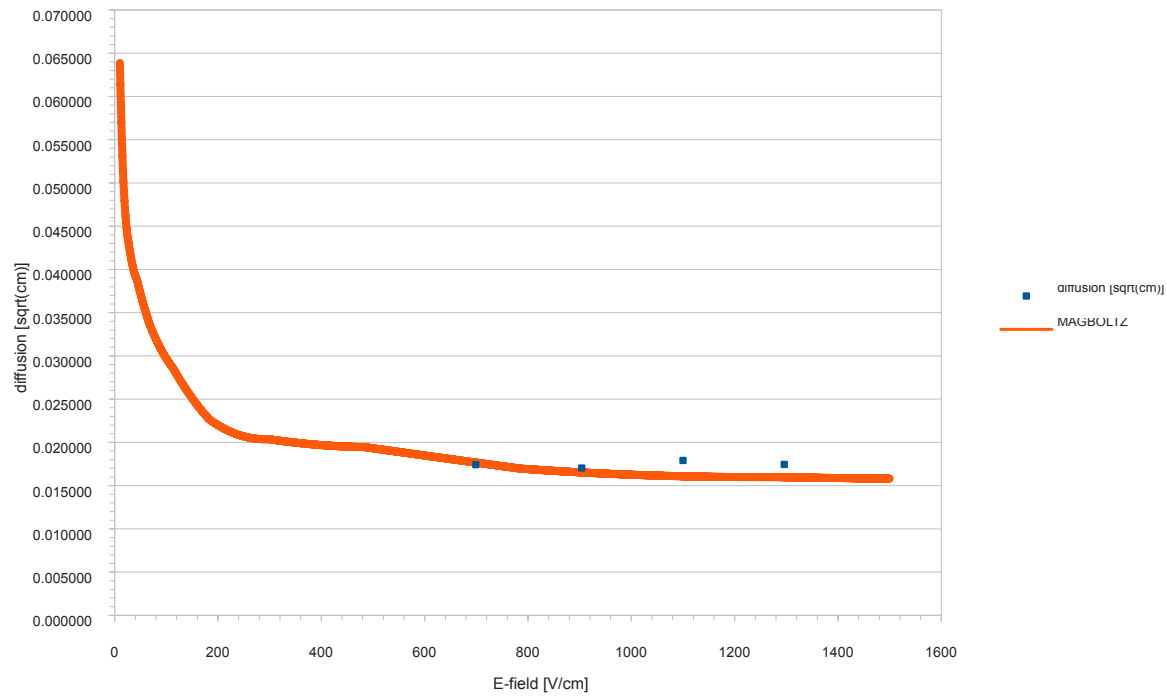


Diffusion measurement concept: use of pulse shapes give diffusion information
(uncertainties related to electronics contributions large when diffusion low)



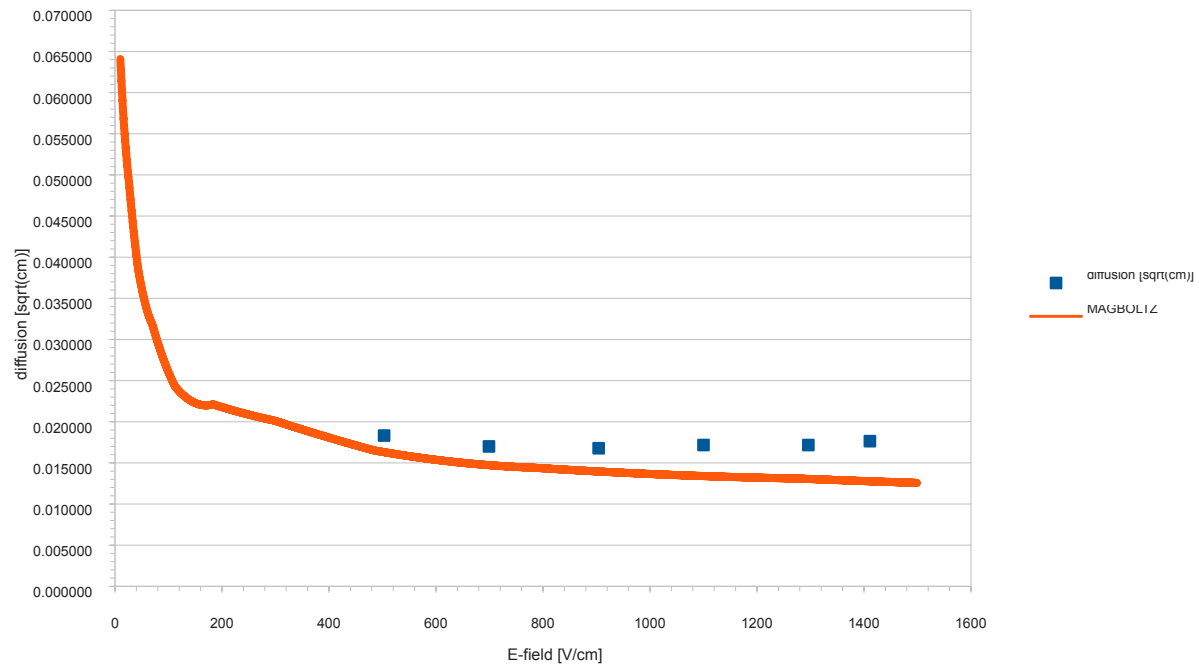
He/Iso 90/10

Diffusion vs. E-field
He/Iso 90/10



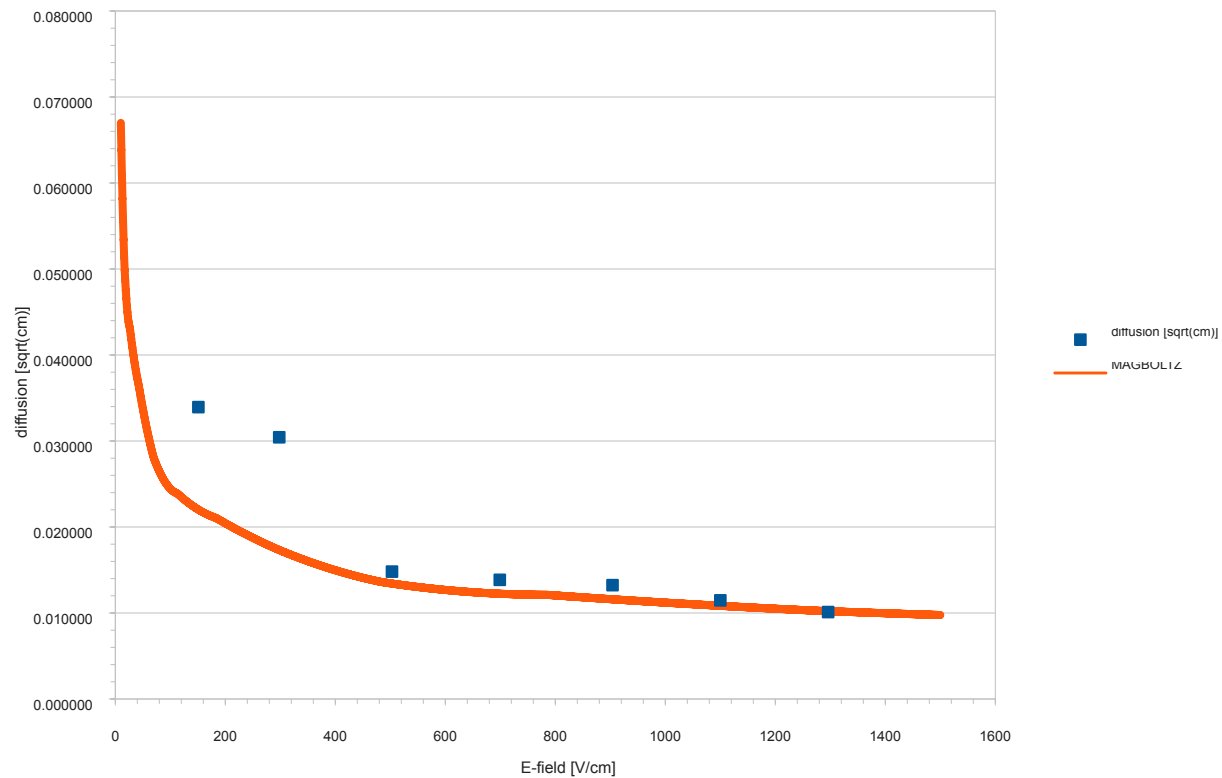
He/Iso 80/20

Diffusion vs. E-field
He/Iso 80/20



He/CF4/Iso 75/10/15

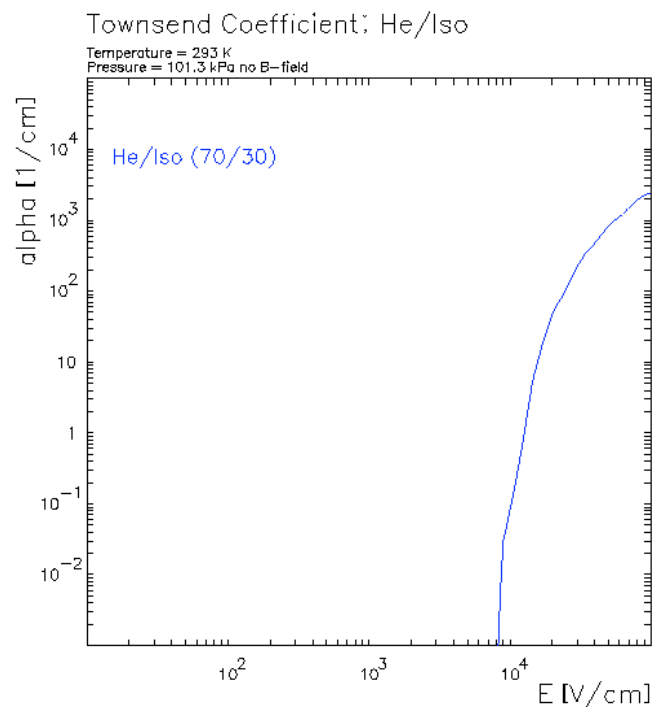
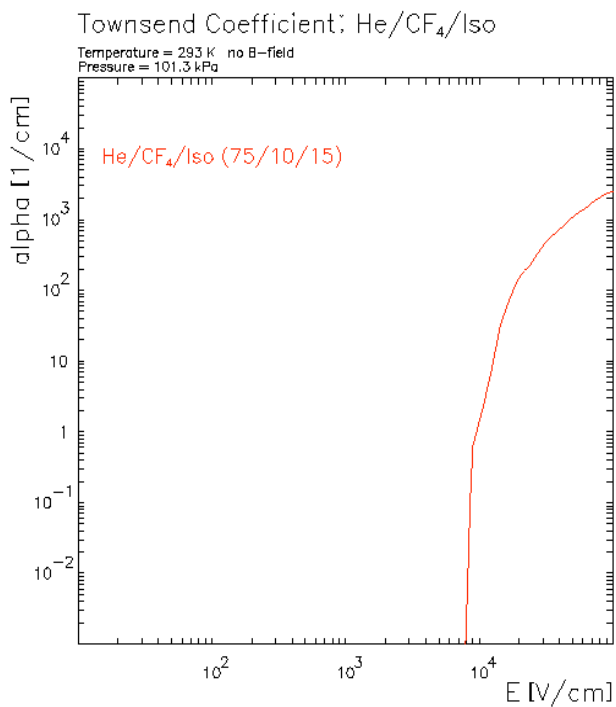
Diffusion vs. E-field
He/CF4/Iso 75/10/15



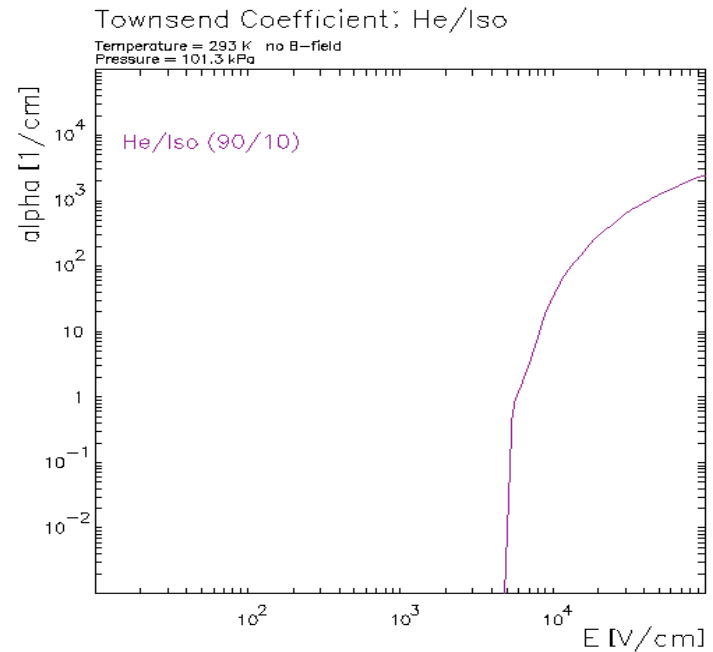
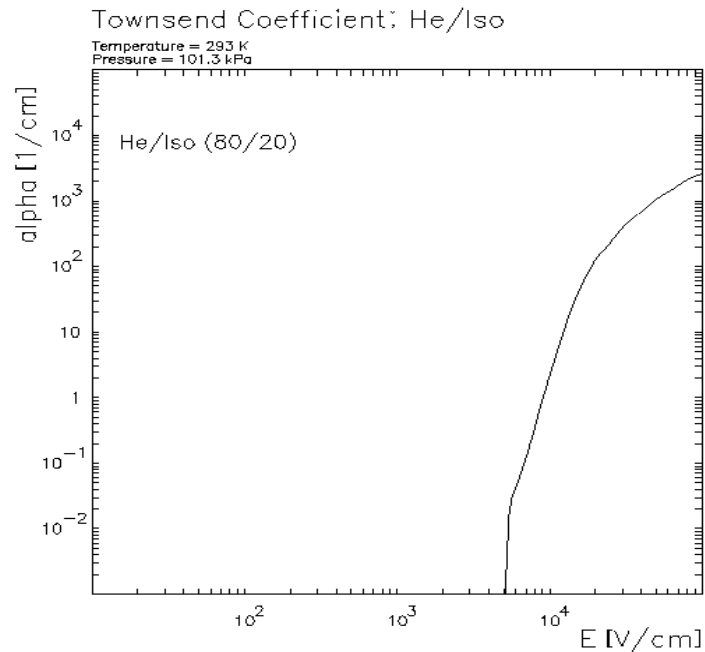
Conclusions & next steps...

- magboltz general features are validated, but details not necessarily at high precision
- He/CF₄/Iso gain relative to He/Iso fine
- Study other He/ CF₄ concentrations
- Need better understanding of diffusion study systematic uncertainties

Townsend Coefficients



Townsend Coefficient



Plotted at 01:07:33 on 08/10/09 with Gafield version 7.23.