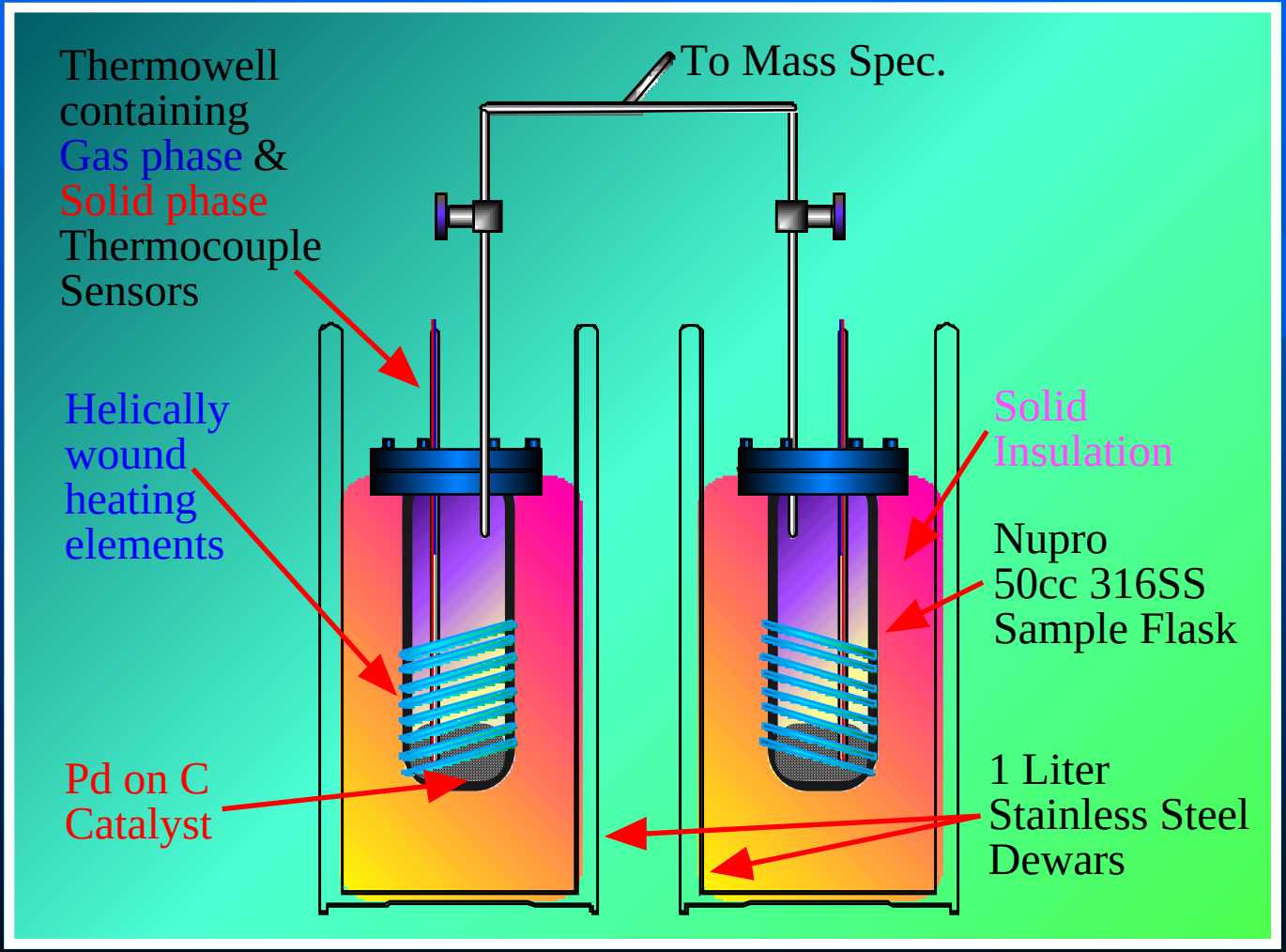
Review of experimental measurements involving dd reactions

Michael C. H. McKubre
Director of the Energy Research Center
SRI International, Menlo Park, California.

Presented at the Short Course on LENR for ICCF-10
August 25, 2003

Case cell Studies:
D_2 Gas with Pd/C Catalyst



Case Conclusions

- Near quantitative correlation between Heat and ^4He production according to:

Predicted: $d + d \rightarrow {}^4He + \sim 24MeV_{(lattice)}$

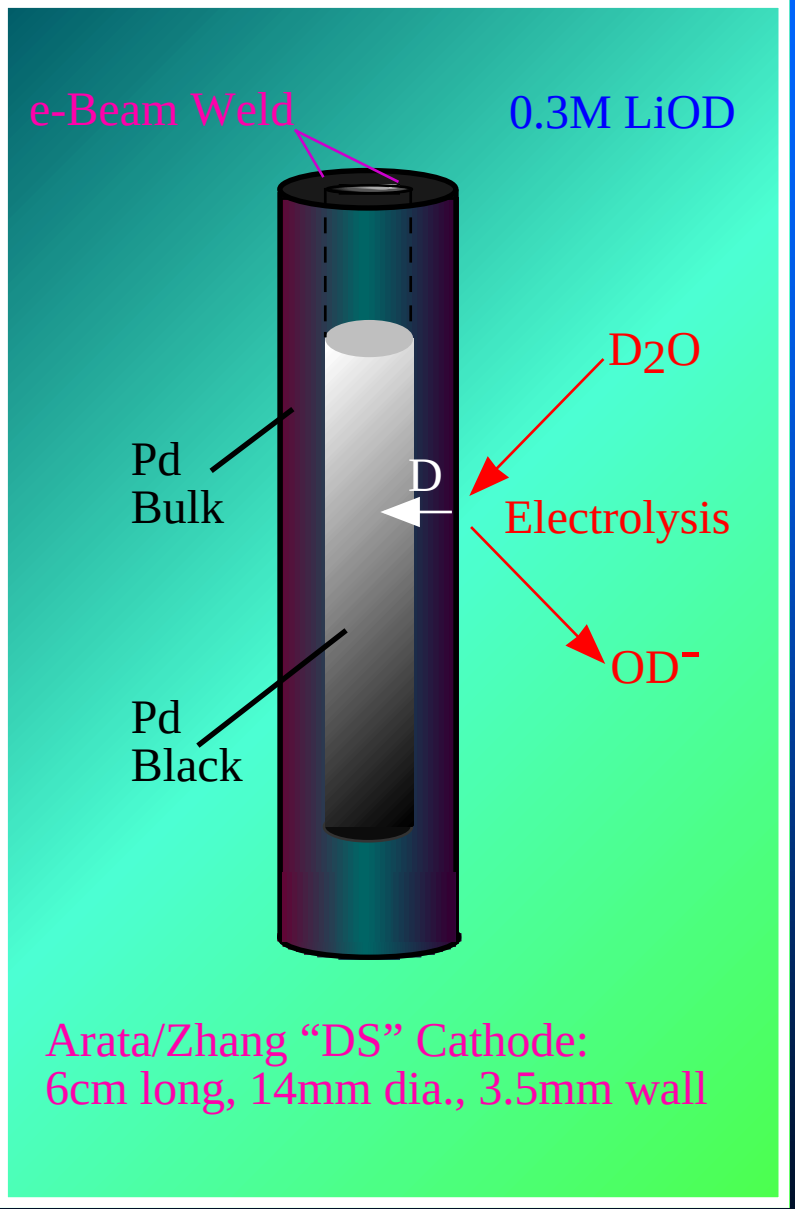
Measured: Q = 31 ± 13 MeV/atom

- Discrepancy may be due to solid phase retention of ^4He
- Substantial initiation time >> D diffusion.
- Max $[^4He]_{Sample} / [^4He]_{Air} > 2$

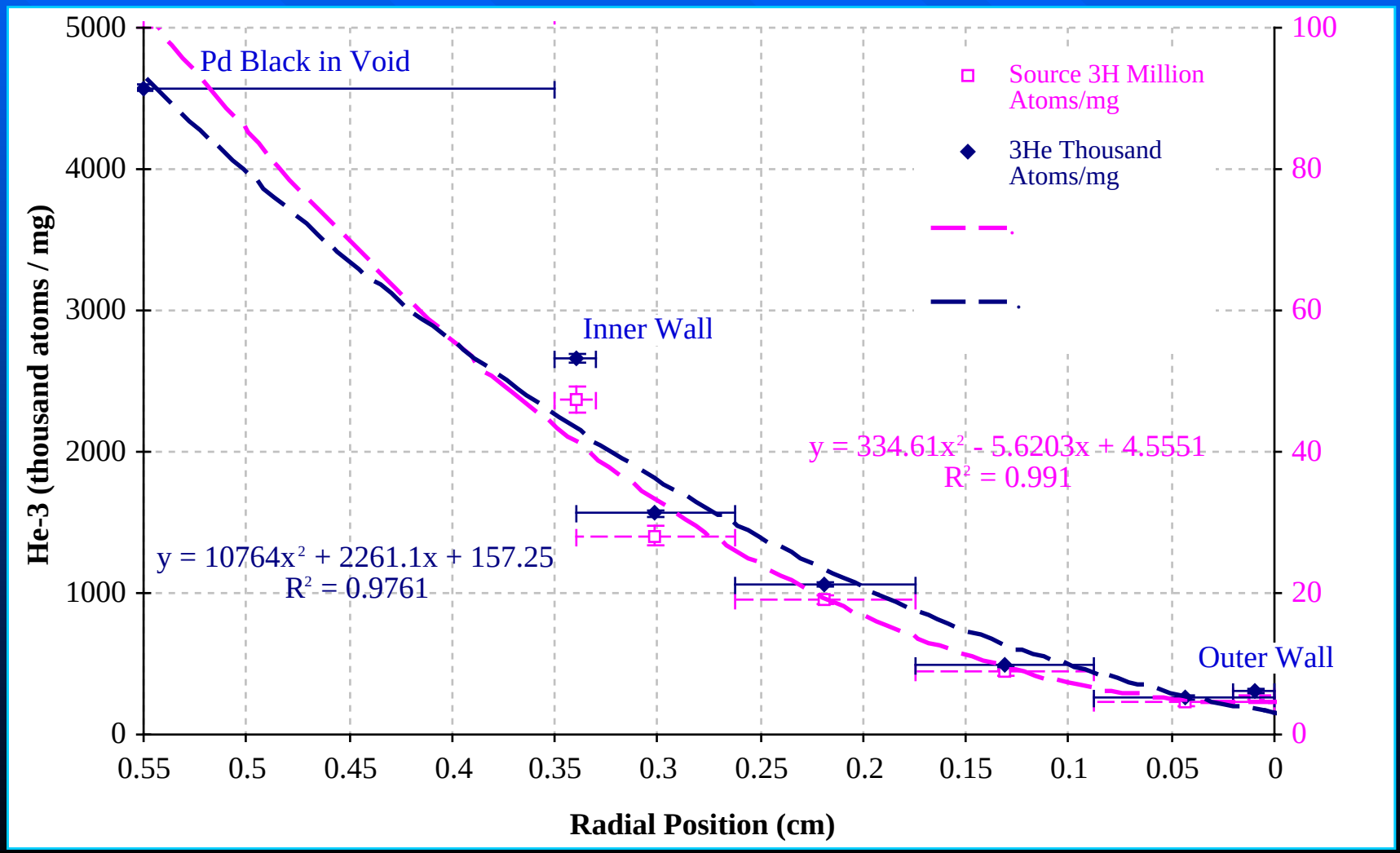
Production of Tritium in a Sealed Pd cavity

AZ1 0.3M LiOD, AZ2 0.3M LiOH
Cathodic Current 5 - 7.5A
Current Density 170-255mA cm^{-2}
P_{in} 50-317 W, Duration 120 Days
$P_{xs,Max}$ = 10 ±1.5%, P_{xs} 0 ±1.5%,

Deloaded:
open circuit and at 2V Anodic
for a further 100 Days.



AZ1: Radial Distribution of ^{3}He and ^{3}H



Tritium Conclusions

- **Production of Tritium was between $2x10^{15}$ and $5x10^{15}$ atoms.**

Modeled as a single event, this occurred during cathodic electrolysis.

There is definite evidence of excess ^3He from Tritium decay of all samples of Pd & Pd-black from the D_2O experiment.

Samples of Pd taken from a similar and contemporaneous H_2O electrode show low ^3He levels consistent with blank Pd.

Measurements of the ^3He gradient through the 3.5mm wall of the D_2O electrode show that the ^3He is the decay product of Tritium which diffused from a source inside the electrode.

No evidence for ^4He quantitatively consistent with excess heat.