Conventional Fusion in an Unconventional Place

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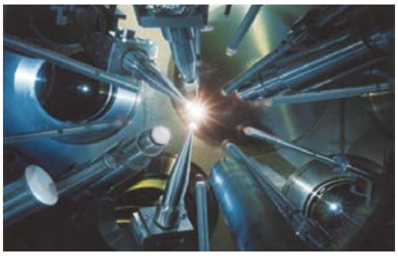
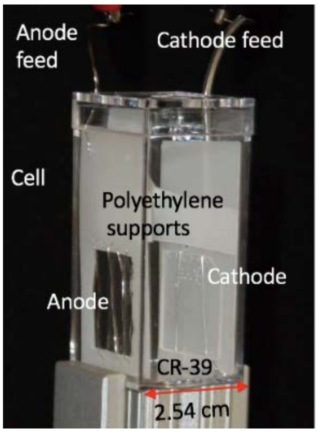


LLE Omega Laser Fusion [3]

Although hot fusion research began 70+ years ago, great technical difficulties exist in bringing fusion to commercial fruition. Consequently, there is a need for alternative approaches other than thermonuclear D-T fusion [1]. These approaches range from beam and muon-catalyzed fusion (with unlikely energy gain), to proton boron-11 fusion [2] (with high bremsstrahlung energy losses), to the less understood condensed matter nuclear reactions *aka* Low Energy Nuclear Reactions (LENR).

This talk will contrast the hot fusion triple-product [4] with the condensed matter nuclear science alternatives. Notably, both high and low energy fusion research need better modeling that experimental data synergistically drives. While many LENR electrolysis and gas loading experiments failed, the successful experiments had factors in common that modeling can expose [5]. Finally, the patented co-deposition protocol [6,7], successfully used for 30 years [8,9,10,11,12], will be discussed. Government, institute and university laboratories from 14 countries have published over 60 peer-reviewed co-deposition papers. Hundreds of successful experiments have established its reliability and reproducibility. Both are necessary to demonstrate and probe a scientific phenomenon leading to power scaling and a deployable technology.



Co-deposition Cell

[1] D(t,n)α
[2] ^{11}B(p,α)2α, *aka* tri-alpha reaction
[3] www.rochester.edu/currents/V29/V29N05/photos/Omega2.jpg
[4] $nT\tau_E$, n=plasma density, T=plasma temperature and τ_E = energy confinement time.
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