Cold Fusion Experiments To Do

Iwamura reactor: Usually D from gas. Early D from electrolysis.
Experiments to do:
1. Gamma ray emission in transmutation reactions? Isotope ID.
2. X-radiation for power measurement? Faster and more precise than calorimeter.
3. Pebble bed reactor.
4. Transmutation of Th and U. Transuranics? Get attention of DOE.
5. Explore D/H ratio. Extend to natural H? Extend to water vapor? To CH4?
6. Extend by variation of pebble size, composition, layering, etc.
7. Explore pebble bed flow rate. Run reactor to end of reaction.
8. Run original Iwamura to end of reaction.
9. Measure time from power on to reaction start. Quantify stochastic start.
10. Can Iwamura reactor recycle D? Clean pebble bed? Minimize $/Watt over time.
11. Show n poisoning by a shielding experiment.
12. Locate reaction. In Pd? CaO? At surface? Gas above surface?
13. Search for fuel beyond D. Beryllium?
14. Search for inert or nearly inert elements (carbon?)
15. Explore radioactivity of transmutation products. Nuclear medicine.
16. Ordinary hydrogen ash?

FP reactor and Oriani reactors.
FP electrolysis of D with Pd cathode.
Oriani electrolysis of ordinary water with Ni cathode.
Experiments to do:
1. Many of the Iwamura experiments can be done with electrolysis.
2. Improve instrumentation with X-rays for power.
3. Attempt transmutations, then us gamma rays to track power.
4. Change D/H ratio. Extrapolate beyond natural D/H. Pure H if available.
5. Infrared speckles. Sparkler. Confirm. Sparkle duration, energy, etc.
6. CR39 tracks outside reactor. Inside CR39, identity of two shower particles.
7. Repeat sandwich experiment. Delayed shower?
8. Explore Miley transmutations. Are these fissions of Pd, O, electrolyte elements?

Evaluate new or questionable instrumentation.
1. Check H+Ni reaction (Foucardi did not measure energy output)
   (Celini did not measure radiant energy output). Must use calorimeter to confirm energy output before claim of excess power can be accepted.
2. Rossi did not measure energy input. Must provide complete energy in and energy out before claim of excess power can be accepted.
2. Check claim of neutron decay tracks in CR39. Do control experiment with radon.

Other experiments:

1. Improve instrumentation. Need speed and accuracy for detecting reaction power, reaction products.
2. Keep complete reactor records:
   description of reactor and transmutation products
   time from turn-on to reaction ignition (stochastic start?)
   duration of reaction (manual stop or natural death?)
   reaction products and locations.

Key tests for theory:

X-rays associated with heat
Gamma rays associated with heat
X-rays associated with transmutation
Gamma rays associated with transmutation.

Basic experimental problem is instrumentation.

How to produce LENR
What to measure
How to measure
Current tools XPS, SIMS, X-rays, gamma rays, transmutations.
Particle tracks (but how to identify the particles? Alpha, Proton, Nuclear recoil)

Long-range technical goals:

Waste remediation
Nuclear medicine
Power
Ordinary H2O for fuel, or ordinary H or CH4
Explosives