Cold Fusion using Organic Acids

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What's wrong with aqueous electrolyte

- 1. They boil at ~100 °C
- 2. Modest Excess Heat
- 3. Recombination is a complication
- 4. Catalyst can react with electrolyte
- 5. Oxidation of Anode
- 6. Alkali dissolves glassware
- 7. Low protium required (strong isotope effect at cathode)

Thermodynamics of Electrolysis

$$H_2O = H_2 + 0.5 O_2 + 280 \text{ kJ/mole}$$
 (water)

HCOOH =
$$H_2 + CO_2$$
 + 31 kJ/mole (liquid formic acid)

$$(COOH)_2 = H_2 + 2CO_2 + 36 \text{ kJ/mole}$$

(solid oxalic acid)

Advantages of Formic and Oxalic Acids

- 1. Low electrical energy required
- 2. Strong organic acids
- 3. Hydrogen evolved at both anode and cathode
- 4. No oxygen evolved
- 5. No recombination catalyst
- 6. Cheap electrode materials
- 7. Low electrical energy required

Advantages of Oxalic Acid (COOH)₂

1. Non volatile strong solid acid

2. Deuterated simply by mixing with D₂O

3. Cheap

The End!

Thank you for your attention.

Funds gratefully accepted to develop a cheap demonstration kit using these ideas!