

# Reports of Anomalous Self-Heating Events

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## Self - Heating

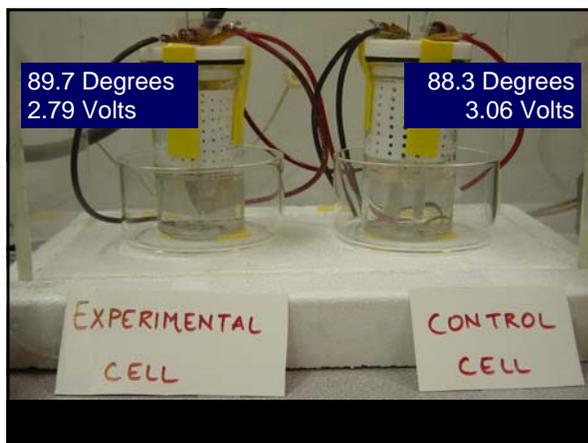
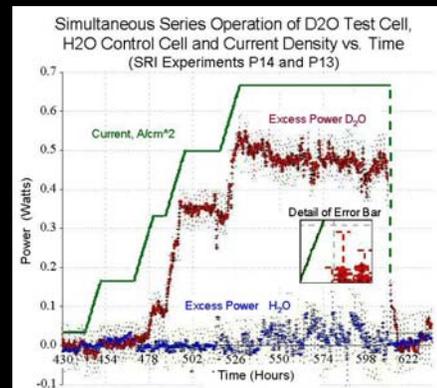
“Unambiguous Heating - Independent from Input Energy”

Beyond Calorimetry  
– Runaway Boiling, Heating, Melting –

## Why is it Important?

- Scientific Curiosity > Societal Benefit
- Nanoscale Hot Spots > Massive Scale Energy

Calorimetry Arguments are SO “Last Year”



## Calorimetry Arguments are SO “Last Millennium”

April 19, 1989

Robert Huggins,  
Materials Scientist  
Stanford Univ.



“We Saw a Difference”

## Denial of Excess Heat?

No Excuse!

## Gluck Criterion for Cathodes

Dead  
Sick  
Healthy

Sick cathodes may be healthy -  
- If given the chance to get hot -  
(Not talking about sex, but positive feedback)

## Healthy Cathodes

1985 – Fleischmann-Pons  
1992 – Fleischmann-Pons  
1990s – Mizuno  
1990s – Forsley  
1990s – SPAWAR San Diego  
1997 – U.S. Government Lab  
Others...

## 1985 – Fleischmann-Pons

12" Hole in Benchtop  
Crater in Concrete Floor  
Partially Destroyed Fume Hood  
Partially Vaporized Cathode  
Particulate in Air

## 1992 – Fleischmann-Pons

4 Cell Boil-Off On-Demand  
144 Watts Excess Power  
485 Percent Excess (W-out/W-in)  
Kel-F Melted > 300 Deg. C

## 1990s – Tadahiko Mizuno

Boiled > 15 Liters of Water in 8 Days  
No Input Power  
80 Mj Energy

## 1990s – Forsley

Cell at equilibrium at 80°C  
**Turn off cell – Oops! Turn back on -**  
Temp. increased rapidly to 125°C  
Cracked a plastic insulator  
Rapidly boiled off all the electrolyte

## What's Needed – Minimum...

- Abandon Flow Calorimetry
- Higher Working Temperatures
- Freedom to consume D2O or Safe Pressurized Configuration
- Ample Pd to Consume (or Ni-H)
- Safe Working Environment

VIDEO  
**F-P 4-Cell Boil-Off**

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