

From Cold Fusion to Low Energy Nuclear Reactions: 2007 Review

Steven B. Krivit, Editor
New Energy Times

International Conference on Condensed Matter Nuclear Science
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Good News



"The scientific process demands of us to keep an open mind and examine new results. It behooves the scientific community to look at all options available."
-- Gopal Coimbatore

More Good News

Chicago Tribune

"Nuclear Reactions May Produce Phones' Power"

RSC | Advancing the
Chemical Sciences

Chemistry World

"Cold Fusion Back on the Menu"

And More

nature.com

nature newsblog

"The evidence that something weird is happening is there. Maybe it's time to think about this again"

Forthcoming ACS Book on LENR

“Tentative Title:

Low Energy Nuclear Reactions Sourcebook

(2008 - Oxford University Press)

Overview of the Field

- 55 peer-reviewed journals
- 13 International Conferences
- 28 Regional Conferences
- 6 Recent books [Storms, Kozima, Krivit/Winocur, Beaudette, Mizuno, Vysotskii/Kornilova]
- 200 researchers
- 13 nations

Condensed Matter Nuclear Science

Other effects

Low Energy Nuclear Reactions

Other effects

Two Groups of Reactions

Low Energy Nuclear Reactions

“COLD FUSION”

NUCLEAR REACTIONS

Heat and Helium-4

Heavy Element Transmutation

Many Methods Claimed

For example:

- Electrolysis (3 methods)
- Gas (2 methods)
- Cavitation (3 methods)
- Others

Nuclear Ash and Effects

Products/Effects	D/Pd	H/Pd
Heat	10^{12} events/s/W	Minor
Helium-4	10^{11} events/s/W	n/a
Tritium	10^4 events/s	n/a
(Fast? Slow?) Neutrons	Uncertain	Uncertain
Charged Particles	Yes	Uncertain
Heavy Element Transmutation	Minor	Major
Gamma-Rays	Yes	Unknown
X-Rays	Yes	Unknown
Hot Spots on Cathodes	Yes	Unknown
Craters, Melting, Vaporization	Yes	Unknown

Reproducibility Challenge

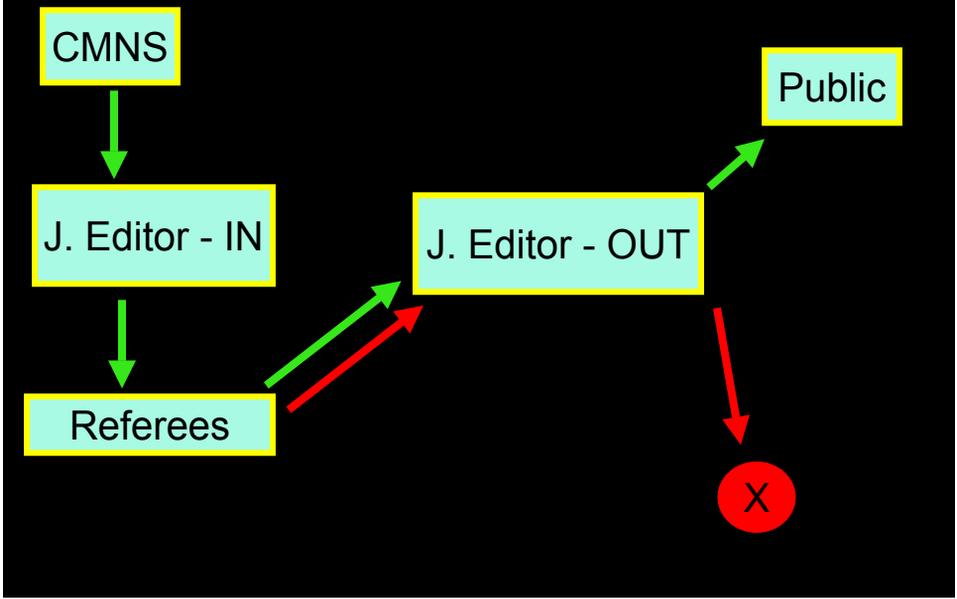
Repeatability - in own lab

Reproducibility - in other's labs

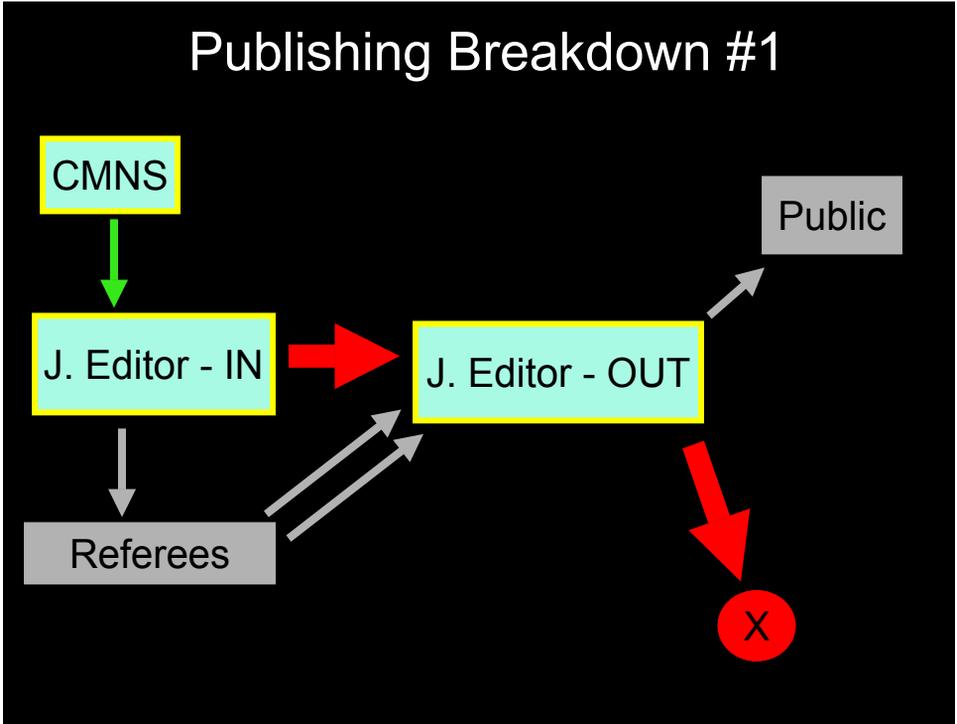
U.S. Navy SPAWAR Co-Deposition CR-39 Nuclear Track Detector Experiment

- 1. Particle emissions - possibly neutrons**
- 2. Emissions penetrate 1mm thick plastic**
- 3. Detected inside and outside cell**
- 4. Repeatable on demand**
- 5. Inexpensive, relatively simple experiment**

Publishing Challenge



Publishing Breakdown #1

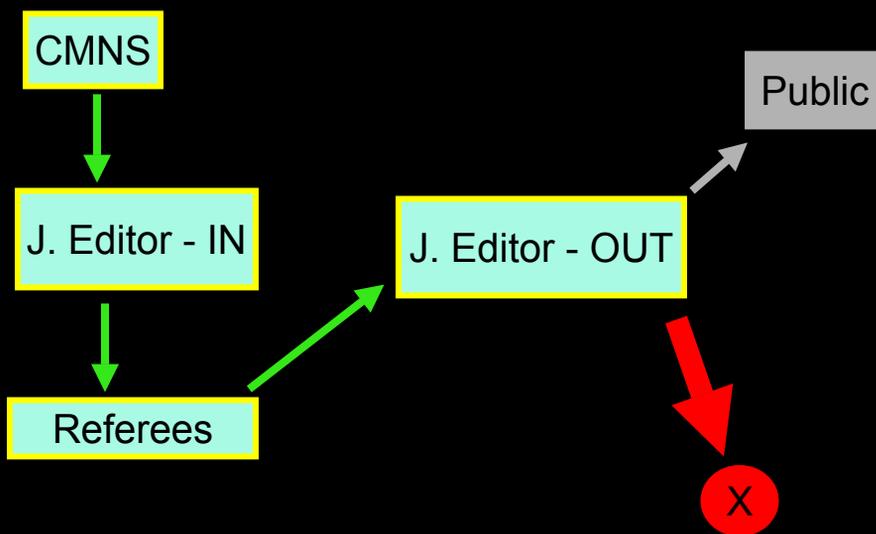


Example: *Nature*

“I can only speak for *Nature* and we wouldn't want it.”

- Editor Karen Southwell (2006)

Publishing Breakdown #2



Example: *ChemPhysChem*

Referee 1:

Importance: A) very important

Hypotheses Yes/No: Yes

Appropriate Length: Yes

**Recommend Acceptance: B) Yes, with
minor alterations**

Example: *ChemPhysChem*

“We sent your manuscript to ten different referees and only one of them was prepared to review your paper.”

- Editor Evelyn Wessel (2007)

Widom-Larsen Theory

Highlights of Claims:

1. Claim: not fusion/fission; weak interactions
2. Claim: Match for one set of Miley, possibly some Iwamura data
3. Claim: Can explain light and heavy hydrogen experiments

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