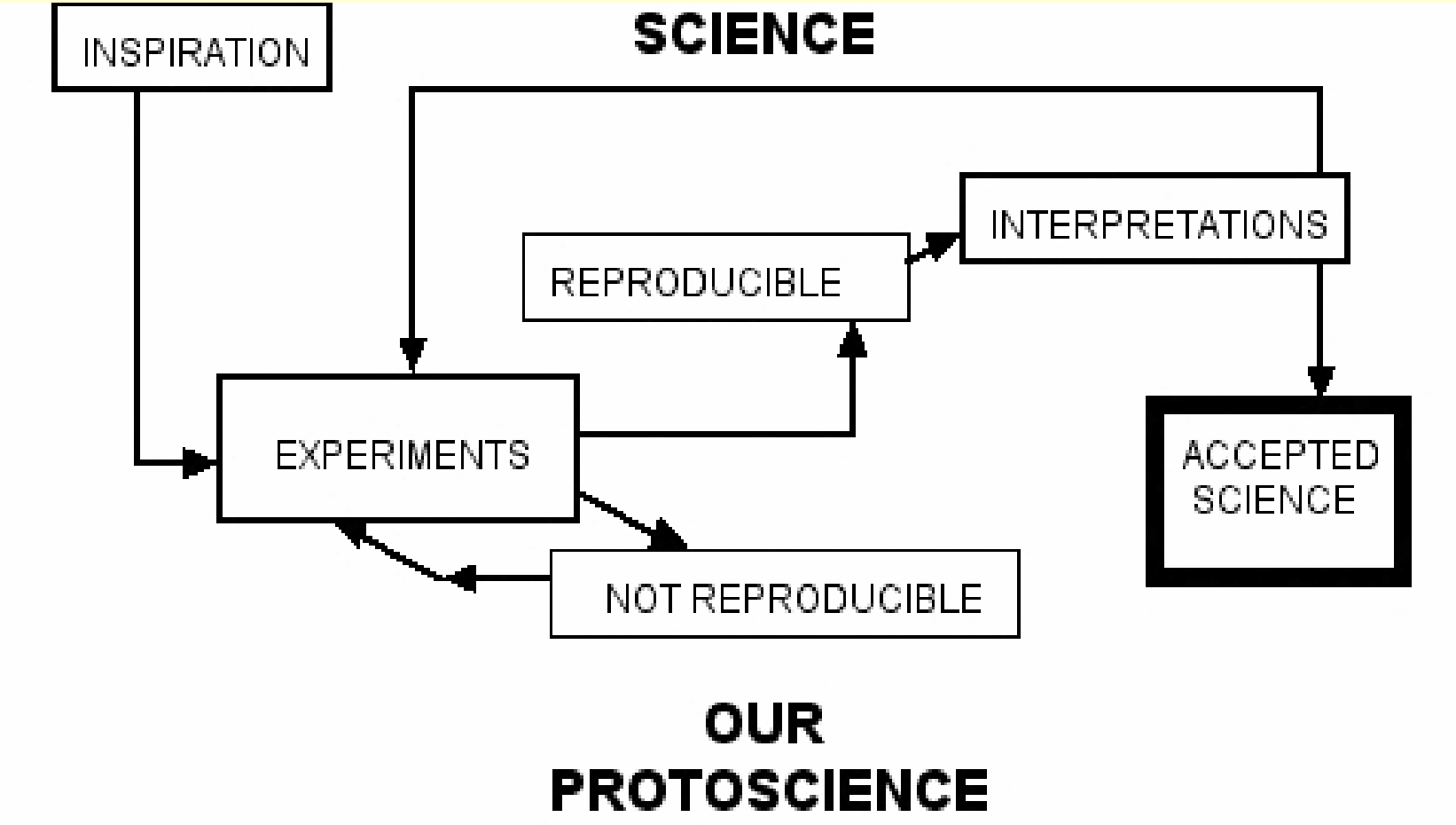
Protoscience --> Science



The URL of the paper? See below.

http://csam.montclair.edu/~kowalski/cf/335cat.html

On emission of nuclear particles caused by electrolysis

Ludwik Kowalski

Montclair State University

I will assume that you read my draft at:

http://csam.montclair.edu/~kowalski/cf/335cat.html

1) Chemical processes (interactions involving outer electrons in atoms and molecules) are too weak to produce emission of nucleons from atomic nuclei.

2) Yet, several qualified researchers, such as A. Lipson, R. Oriani and S. Jones, have been reporting unexpected emission of nuclear particles, for many years (in different experiments).

3) Experimental facts that conflict with existing theories should be studied rather than rejected.

That was my motivation.

Theories give meaning to facts.

Facts support theories.

In this presentation I focus on facts; the main task is to reach a level of mastery at which experimental data can be generated on demand, by qualified researchers.

(1) Two tasks in any CMNS project are:

(a) To show that no experimental errors were made.

(b) To show that what was observed is a signature of a nuclear effect.

(2) Task (b) is easier when nuclear particles are emitted, when isotopic ratios are changed, etc. In the case of excess heat, or morphological surface changes, task (b) is more difficult. Fortunately, (b) is obvious in my study.

So much about “philosophy.”

Any objection, or comment about the content of the prvevious slides?

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If not then we can go ahead.

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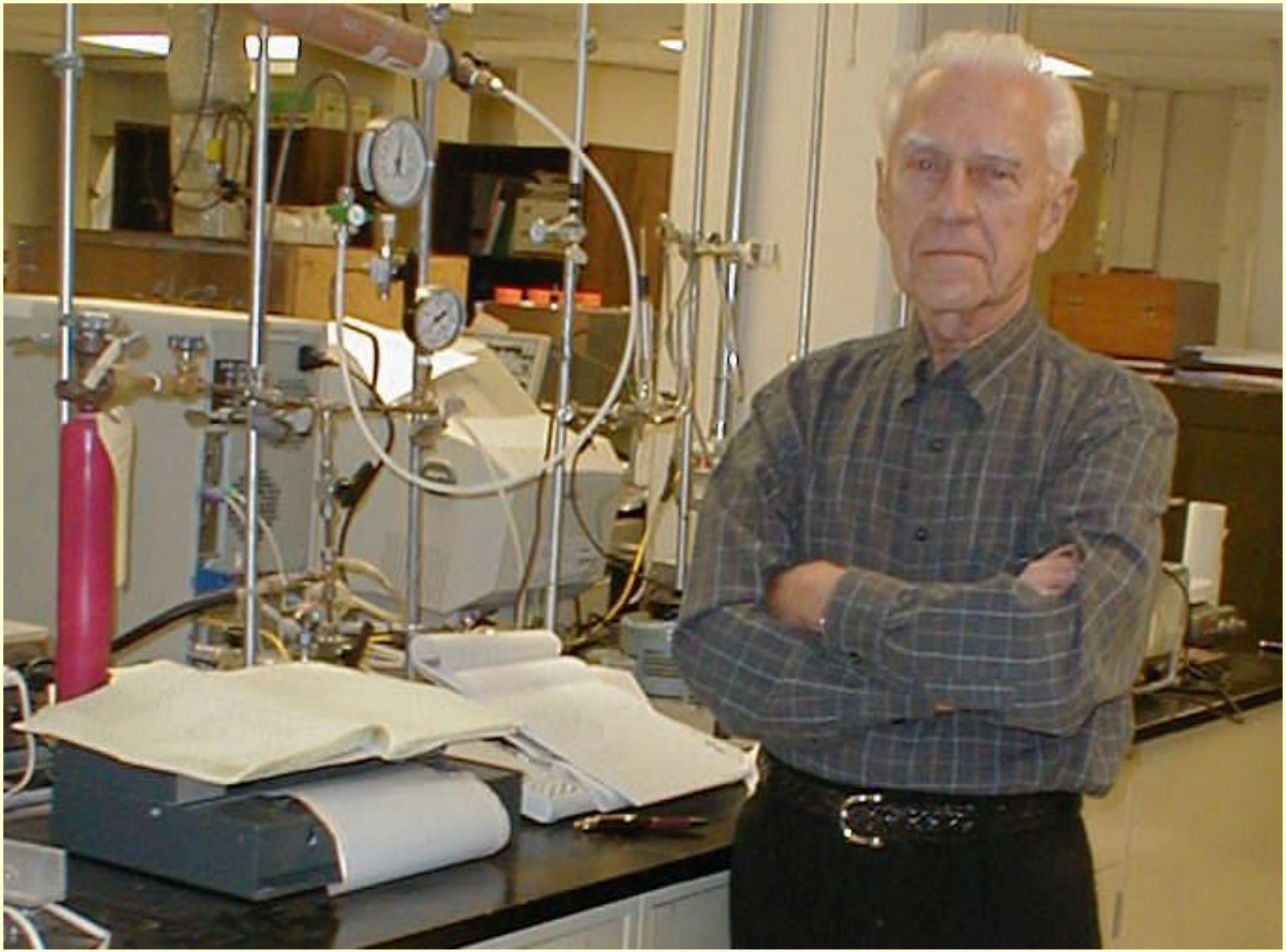
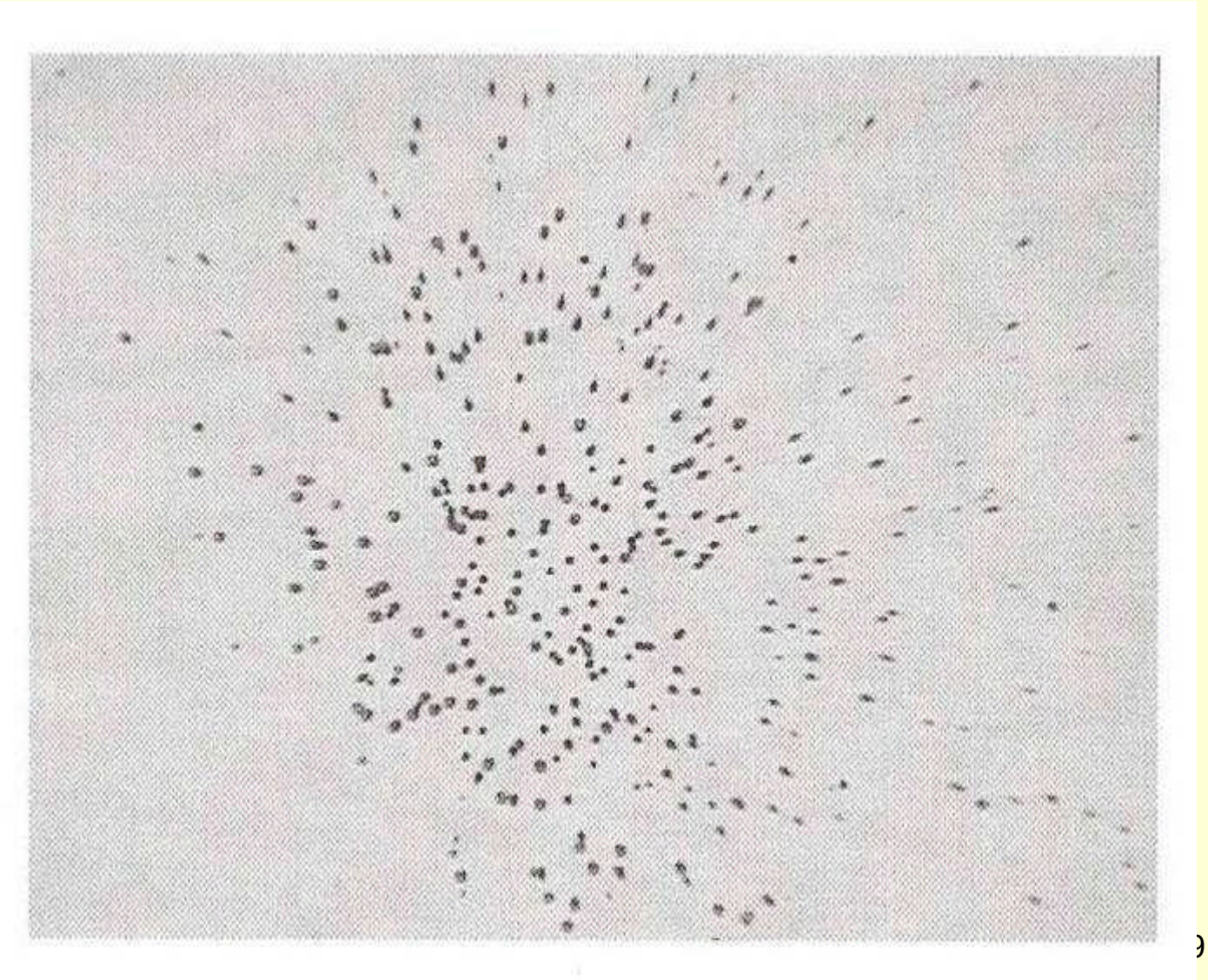
Richard Oriani (2004)

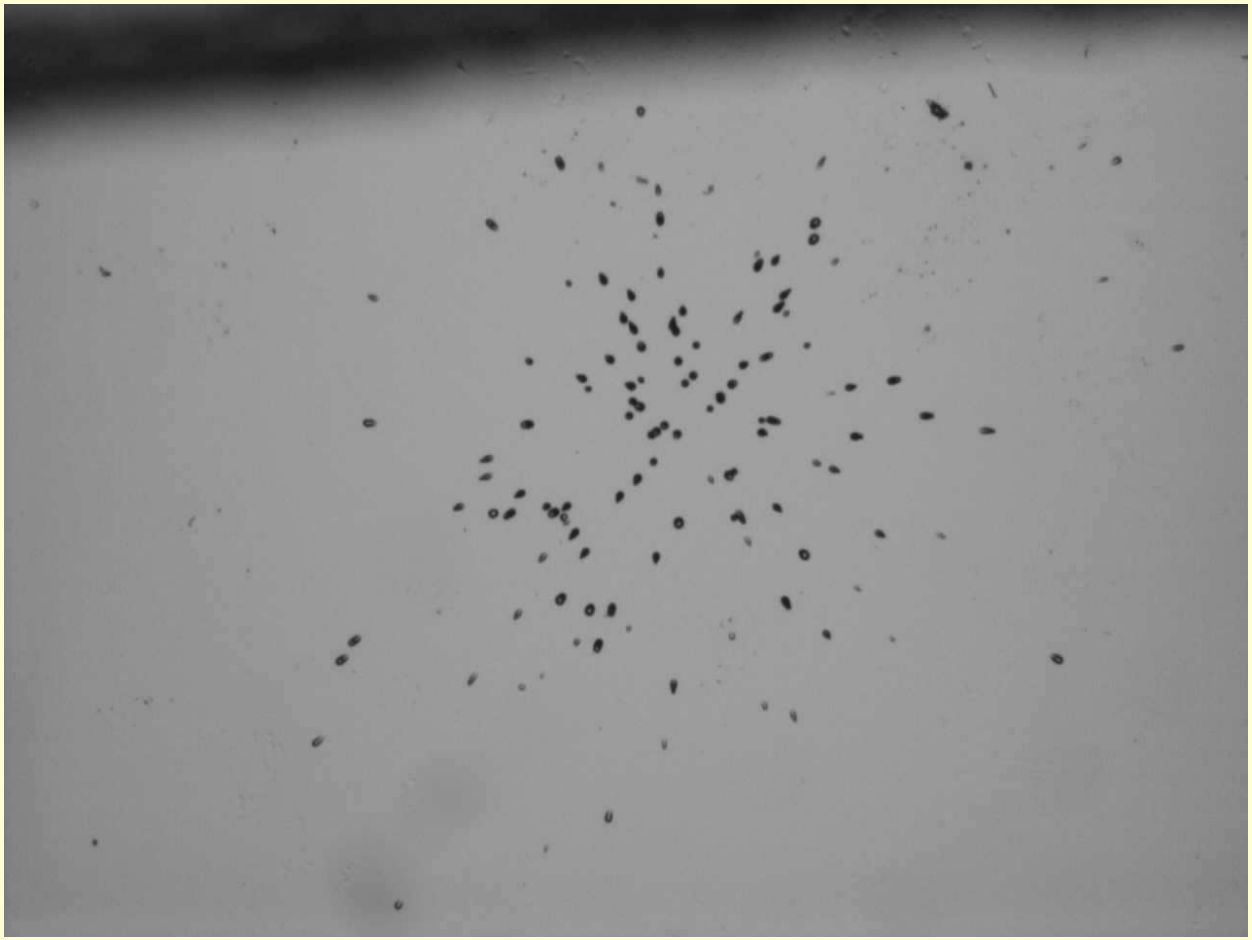


A cluster recorded by Richard Oriani (residual activity)



Let me show you a similar cluster produced during my electrolysis experiment.

Then I will argue against suspected artifacts.



It is tempting to speculate about interpretations at this time. New physics or artifacts? Which well-known phenomena can produce clusters discovered by Oriani?

The issue of poor reproducibility is also very important. Claims are not scientific unless results are independently reproducible.

Contamination due to radon in air (or to uranium, etc.) in the electrolyte ?

That would produce tracks all over, not small clusters.

Any objection to this argument?

Tiny grains of radioactive material on CR-39 ?

That would produce tracks matching the shape of grains. Orientation of elliptical parts would be random.

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Any objection to this argument?

Disintegration of relativistic heavy ions in cosmic rays?

According to (11), the expected flux of such ions, at sea level, is of the order of 10^{-21} particles per km^2 per year. That is less than 10^{-11} per km^2 per the age of the universe !

Any objection to this argument?

Common cosmic showers made of muons and pions?

According to (12), these particles do not produce tracks in CR-39. And even if they did, why would all clusters be small?

Any objection to this argument?

Neutron activation analysis? (security at airports)

1 Not a single cascade on control chips.

2 Entire CR-39 surfaces (3 by 3 cm) would be covered with tracks. Why clusters of the mm size?

3 Why nonrandom orientation of tracks?

What other artifacts should be considered?

I agree that all possible contributions should be discussed before arriving at the conclusion that a new physical phenomenon has been discovered by CMNS researchers.

Yes, extraordinary claims call for extraordinary scrutiny. But that should not mean an automatic rejection.

SUMMARY OF ARGUMENTS

Why not radon, or radium in the electrolyte ?
Why not a grain containing U or Ra ?
Why not pions and muons from cosmic rays ?
Why not total disintegration of heavy ions ?

Ludwik is a con artist; photos are not real.
How can I convince you that this is not true ?

http://csam.montclair.edu/~kowalski/cf/335cat.html

Oriani and Fisher effects (see ICCF10 and ICCF11)

Nuclear activity caused by electrolysis !

Detection of alpha-like particles by using CR39.

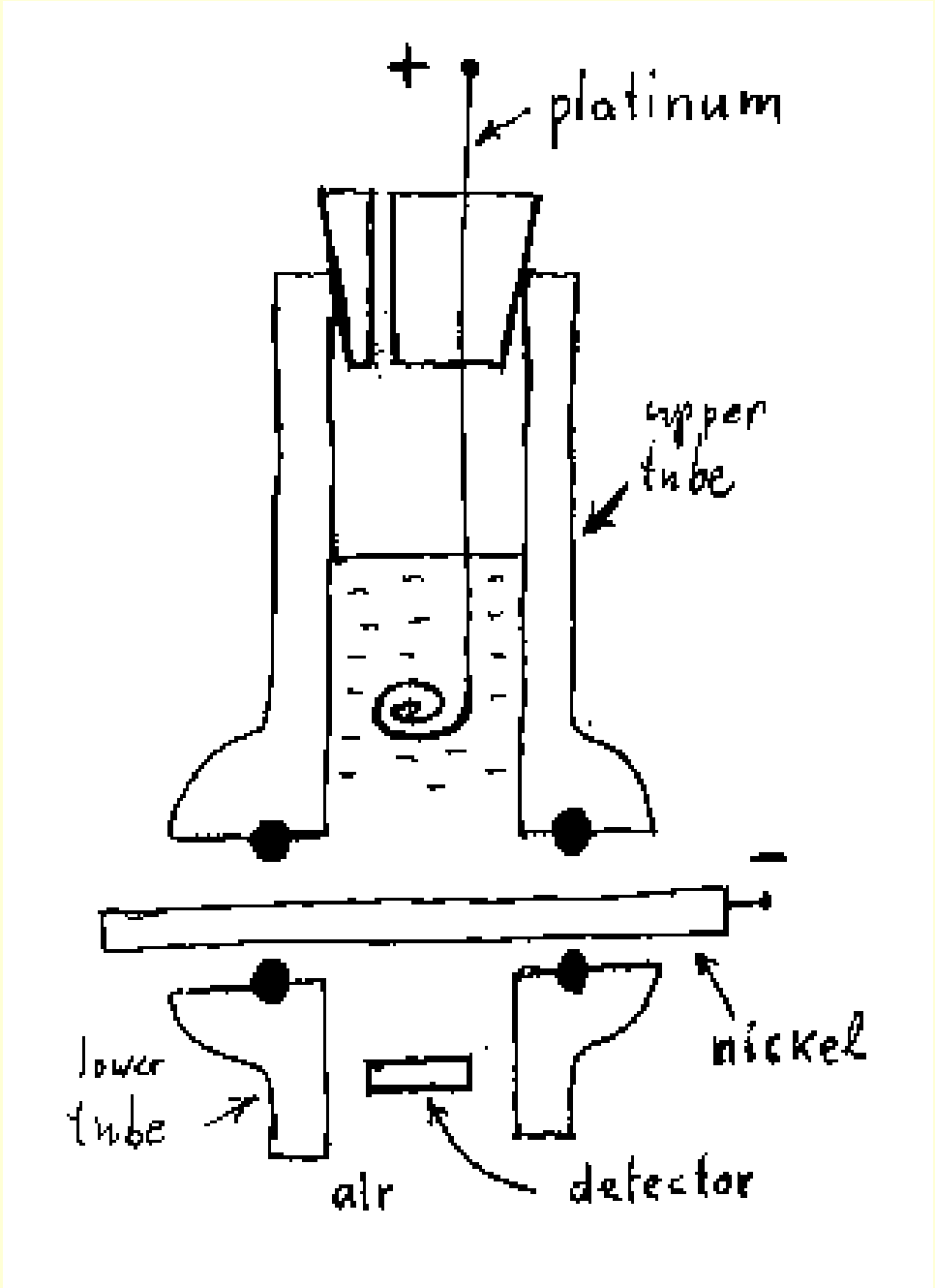
What can be more convincing?

a) In the electrolyte
b) In the escaping H_2 and O_2 vapor
c) Below the cathode (0.12 mm Ni foil)
d) In the air (outside the 1 mm glass wall)

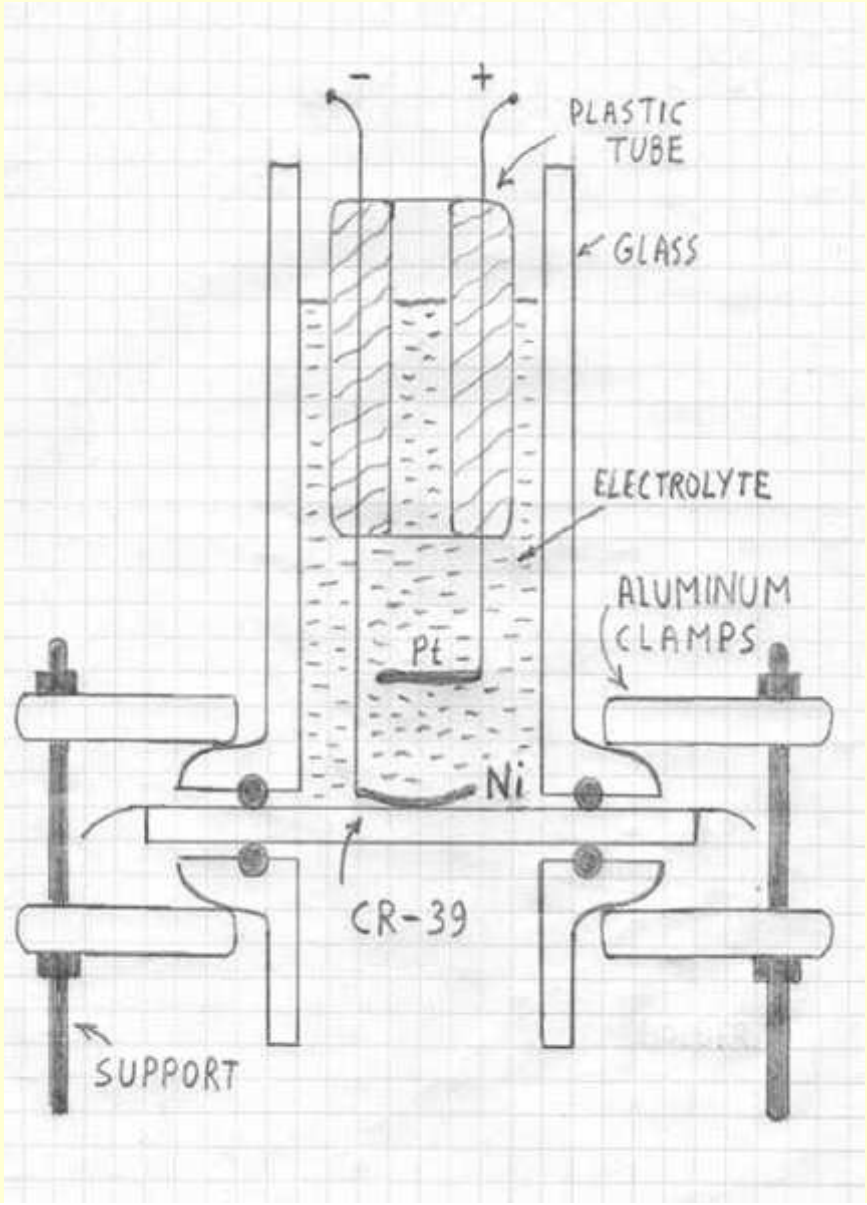
In what follows I will show clusters created during electrolysis and clusters created after electrolysis (effects a and c).

But first I would be glad to answer questions about my experimental setup, or about other practical considerations.

One week in Oriani's lab, November 2004


+
platinum
upper tube
−
nickel
lower tube
air
detector

PACA cell (thin mylar + CR-39, instead of Ni)



Less than a year ago we participated in The Galileo Project organized by Steve Krivit. During that time Richard conceived the idea of a PACA detector. ===>

http://csam.montclair.edu/~kowalski/cf/335cat.html

Five effects discovered by Oriani, using PACA cells:

(a) Production of clusters of tracks during electrolysis. YES
(b) Production of un-clustered tracks during electrolysis. NO
(c) Production of clusters of tracks after electrolysis. YES
(d) Production of un-clustered tracks after electrolysis. NO

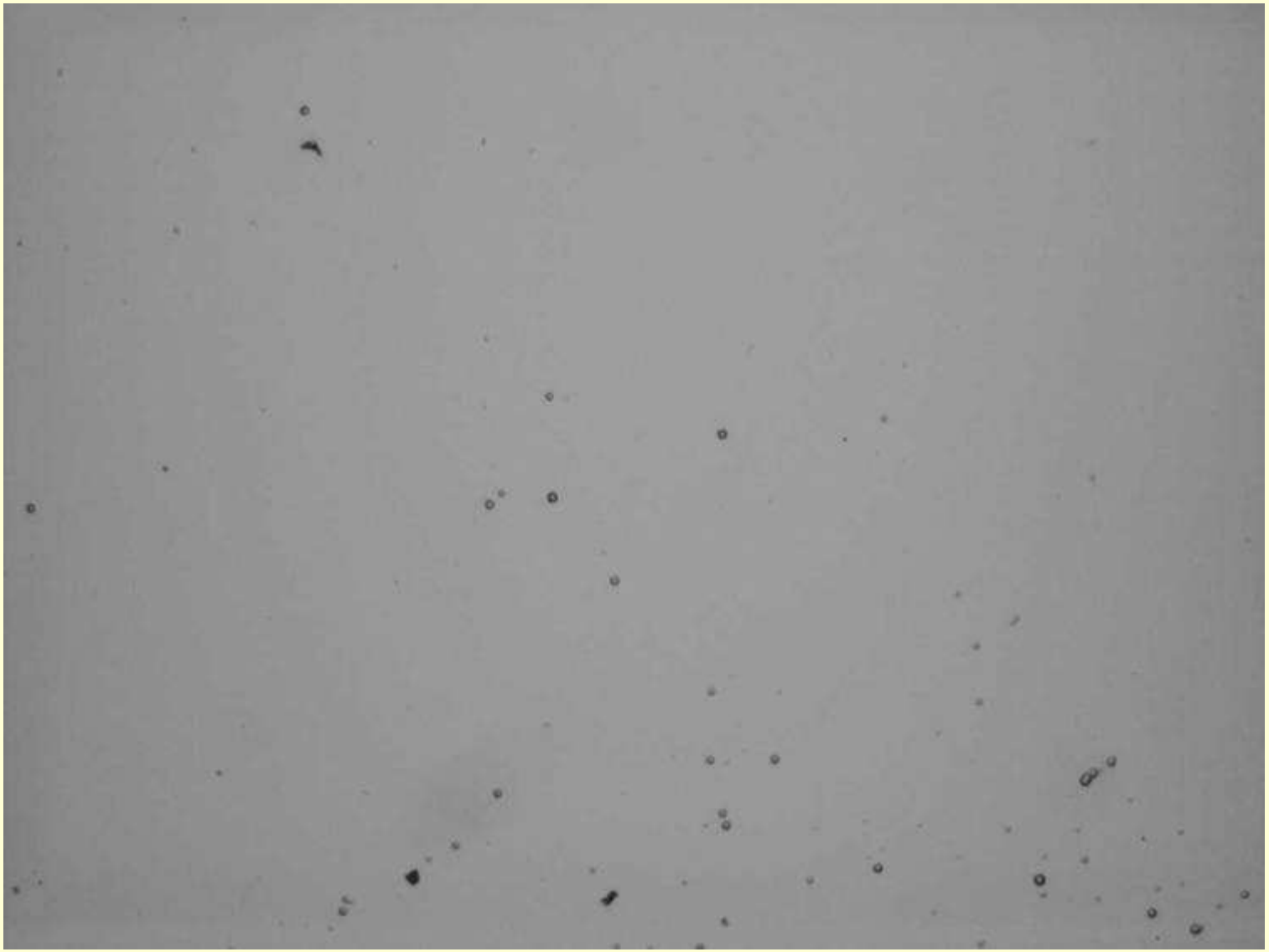
(e) Residual activity (seeded O-rings) is part of the protocol.

Item (e) is the most troublesome. Were my confirmations of (a) and (c) really independent?

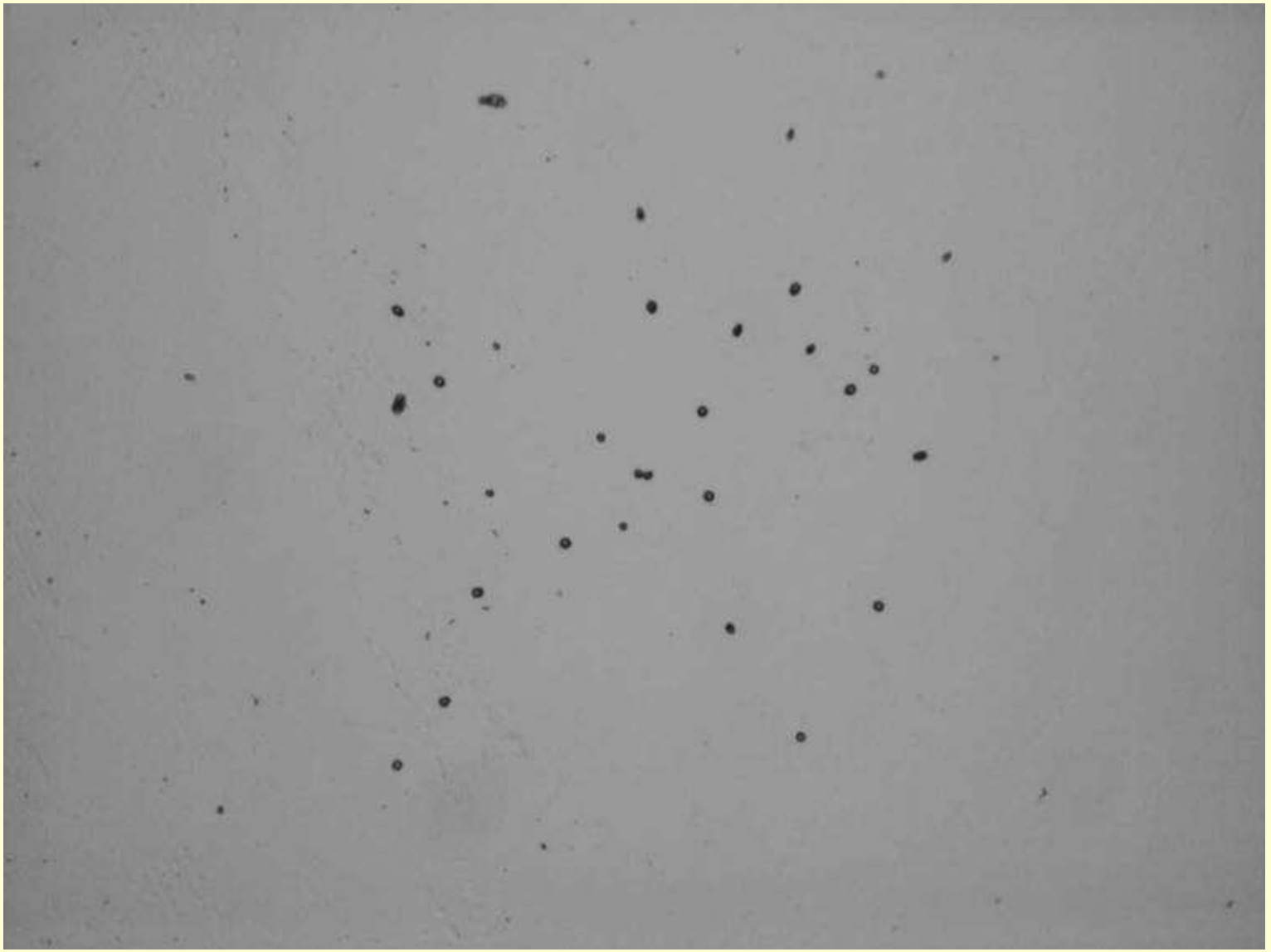
http://csam.montclair.edu/~kowalski/cf/335cat.html

Cluster 1 from Experiment 1 (magn=40, 1 by 1.3 mm)

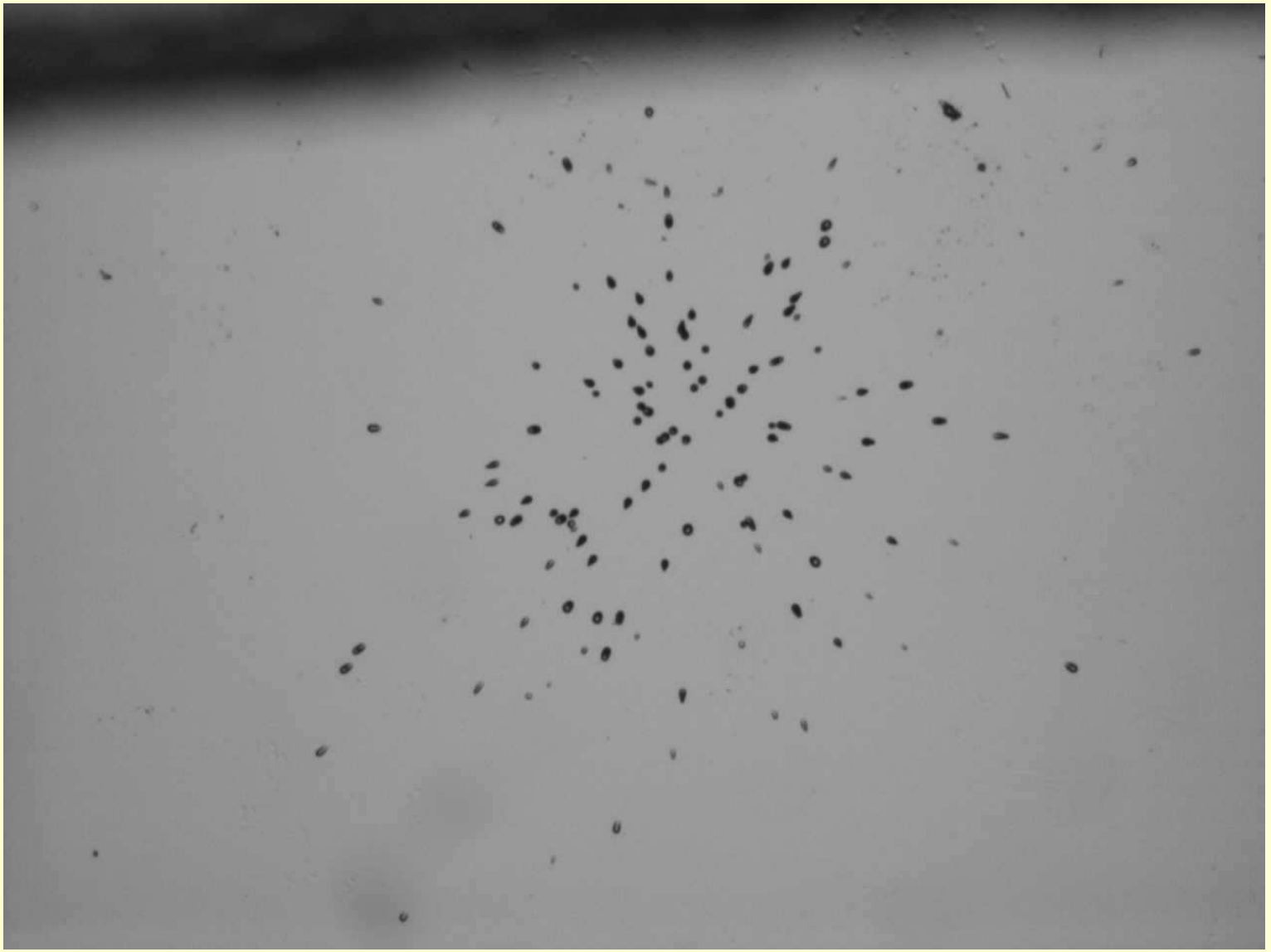
Cluster 1 from Experiment 1



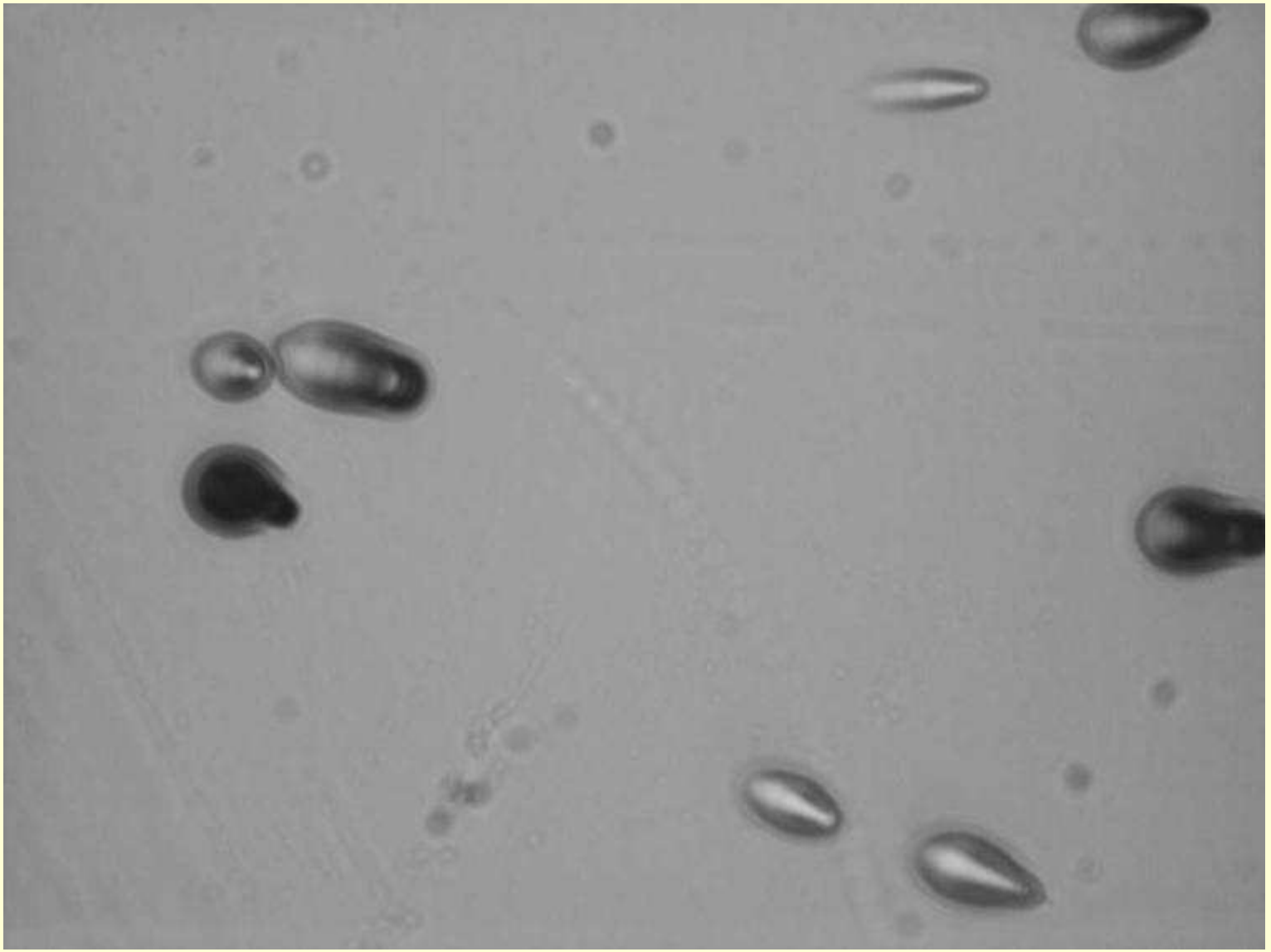
Cluster 2 from Experiment 1 Magn = 40, 1 by 1.3 mm



Cluster 3 from Experiment 1. Magn=40, 1 by 1.3 mm



Same cluster but Magn=400, 0.1 by 0.13 mm



Issue of a contamination artifact. Yes, but not clusters . . .
To which Scott Little replied by posting this figure:

http://csam.montclair.edu/~kowalski/cf/335cat.html

Do not forget that all these pictures and arguments are in my paper at:

http://csam.montclair.edu/~kowalski/cf/335cat.html

On the basis of above arguments, I am convinced that clusters with non-randomly oriented tracks are not due to artifacts.

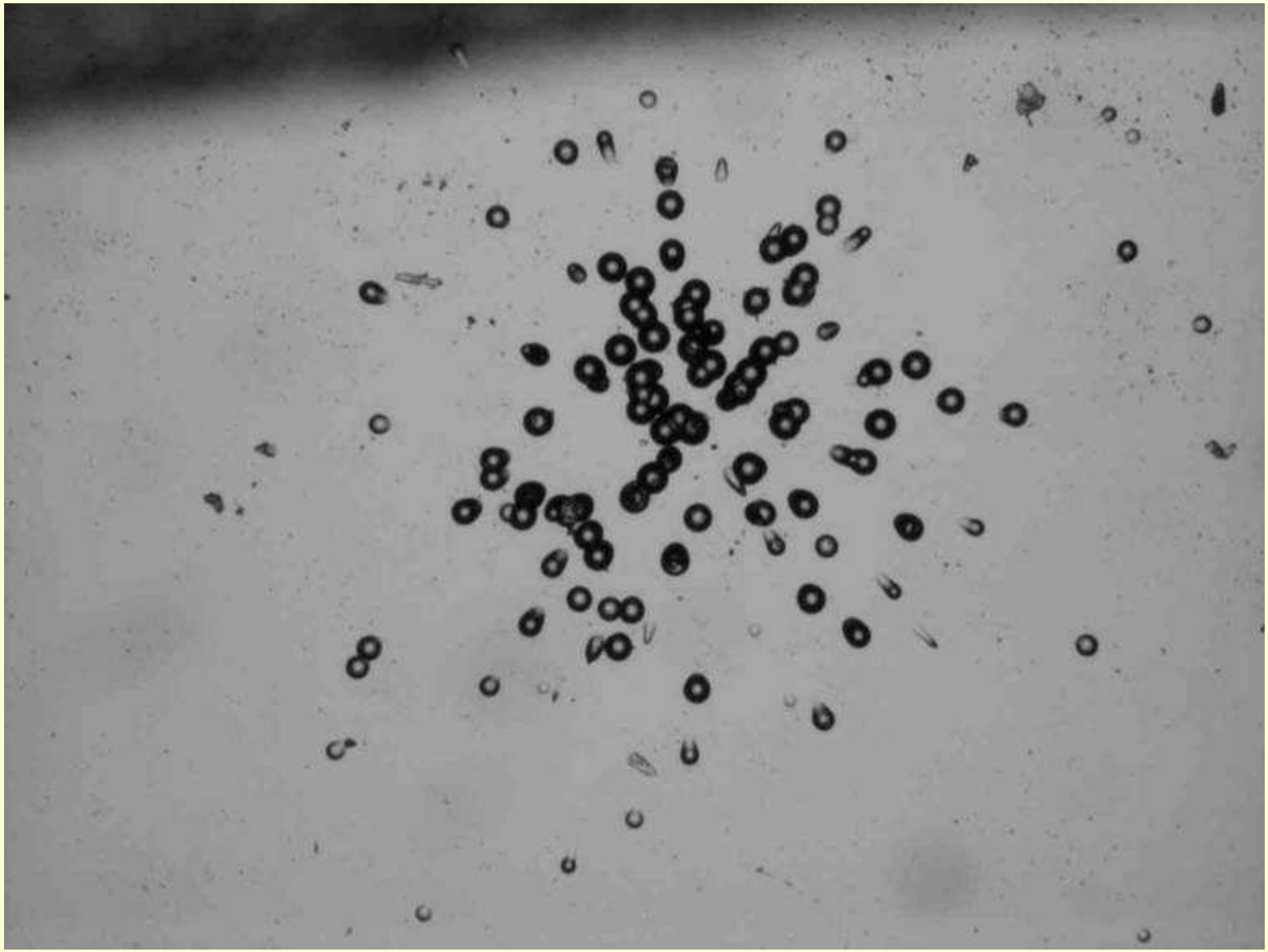
Yes, many clusters have mostly circular tracks. Not everything is clear. Further studies are needed. Join the club !

http://csam.montclair.edu/~kowalski/cf/335cat.html

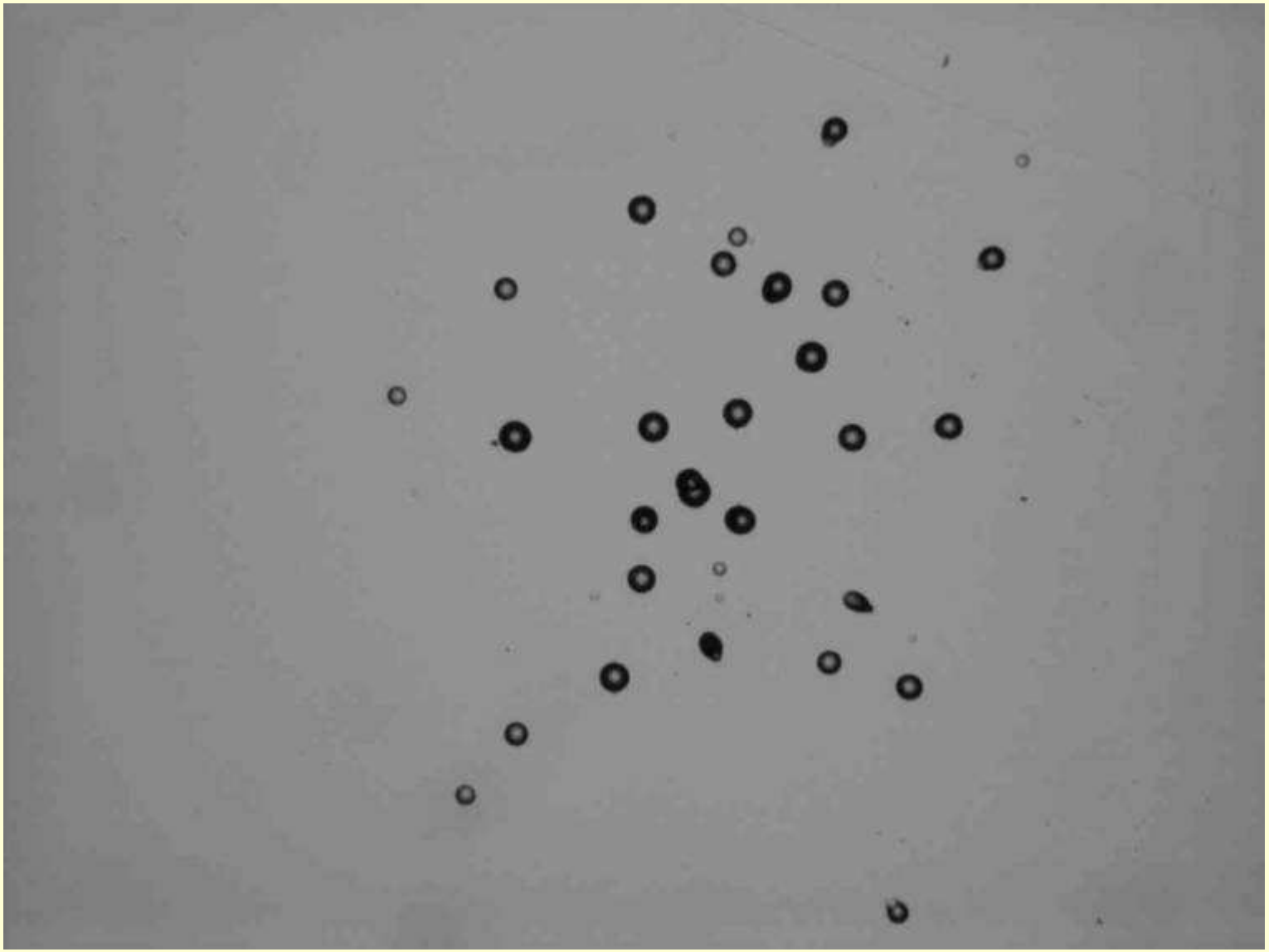
From an email sent on 8/12/07:

The task is to recognize what is real and what is not. It is a constant struggle between the desire to be part of a discovery and the fear of making a fool of oneself.

Same cluster 3 but after % 11 hours of etching



Cluster 4 from Experiment 1. Magn=40, 1 by 1.3 mm



Experiment I lasted 5 days and 4 clusters were produced.

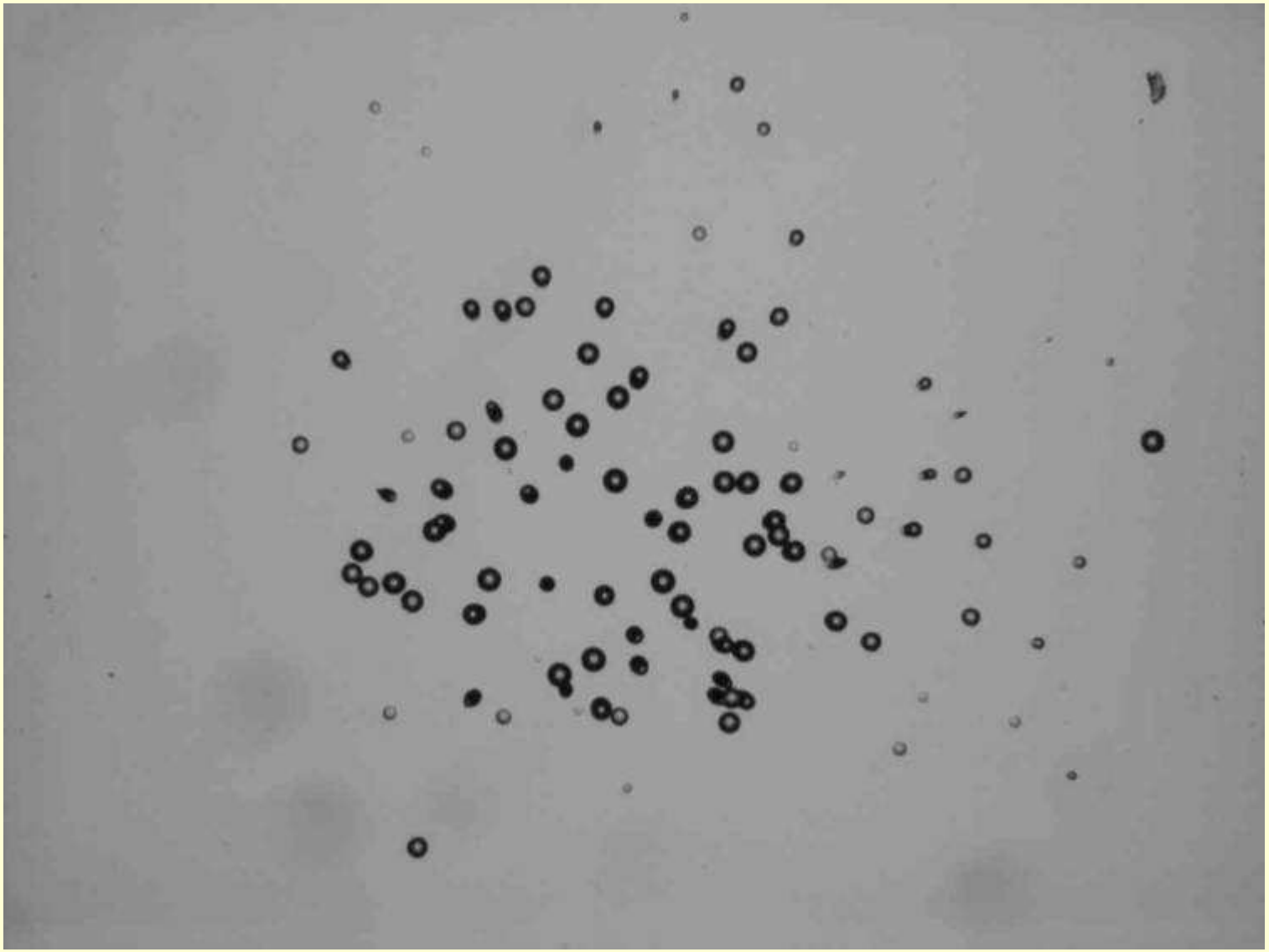
Experiment II lasted 21 days (my own seeded O-rings) and not a single cluster was produced.

But Experiment III, lasting 4 days produced four more clusters. ==>

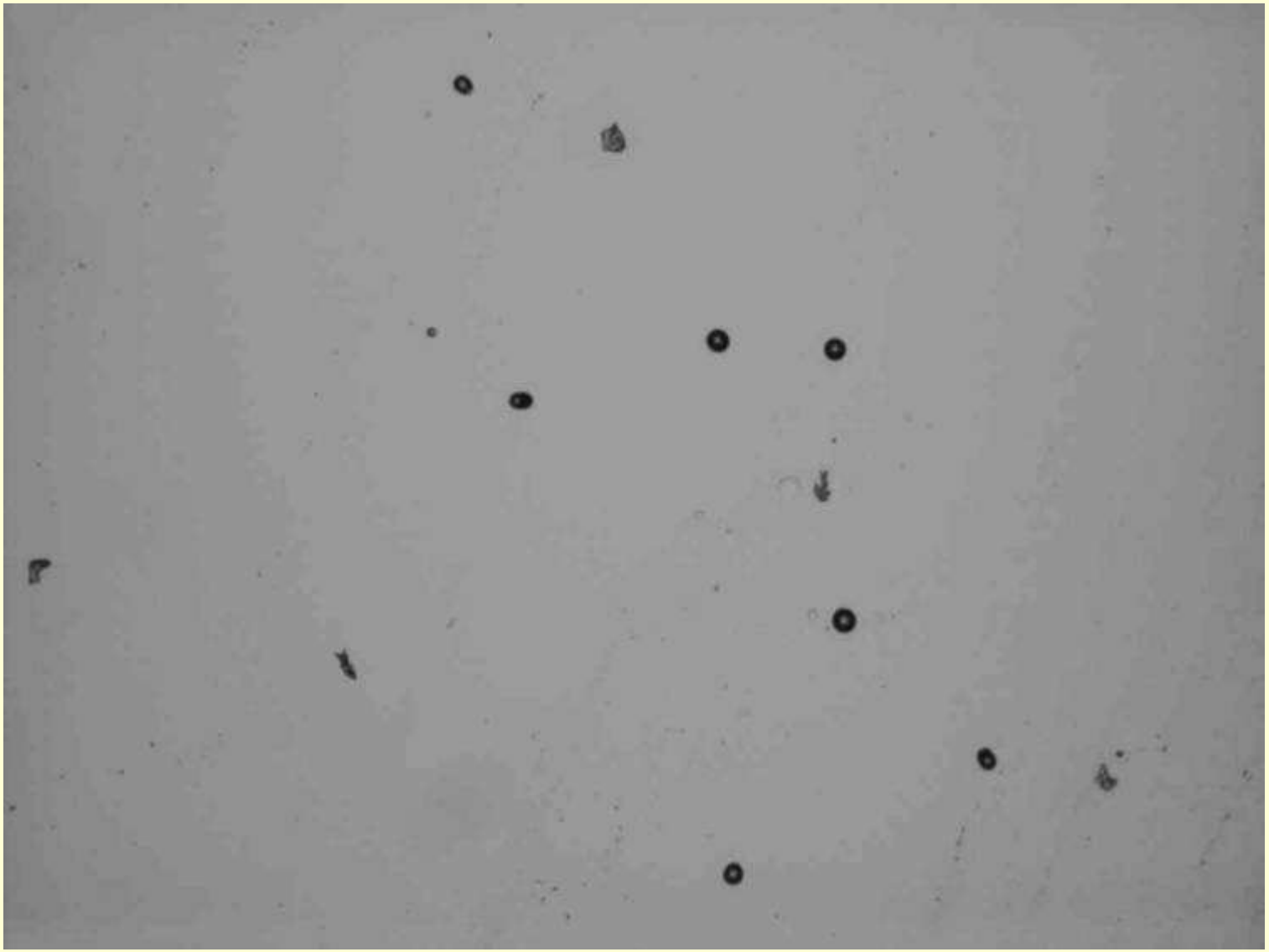
Experiments IV, V and VI produced zero clusters.

Things are not reproducible. But something new and interesting is going on. Why are they not convinced?

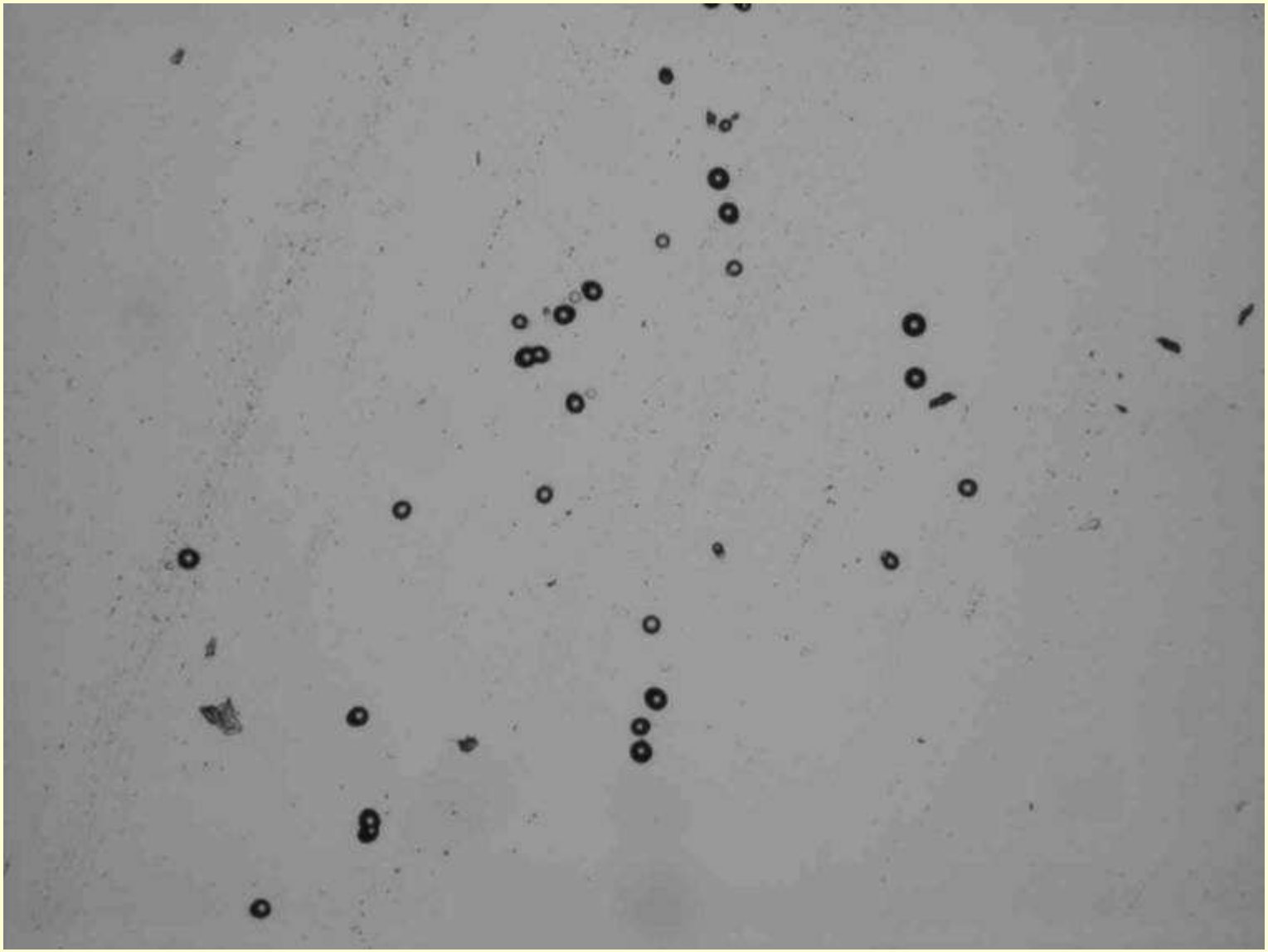
Cluster 1 from Experiment III. Magn=40, 1 by 1.3 mm



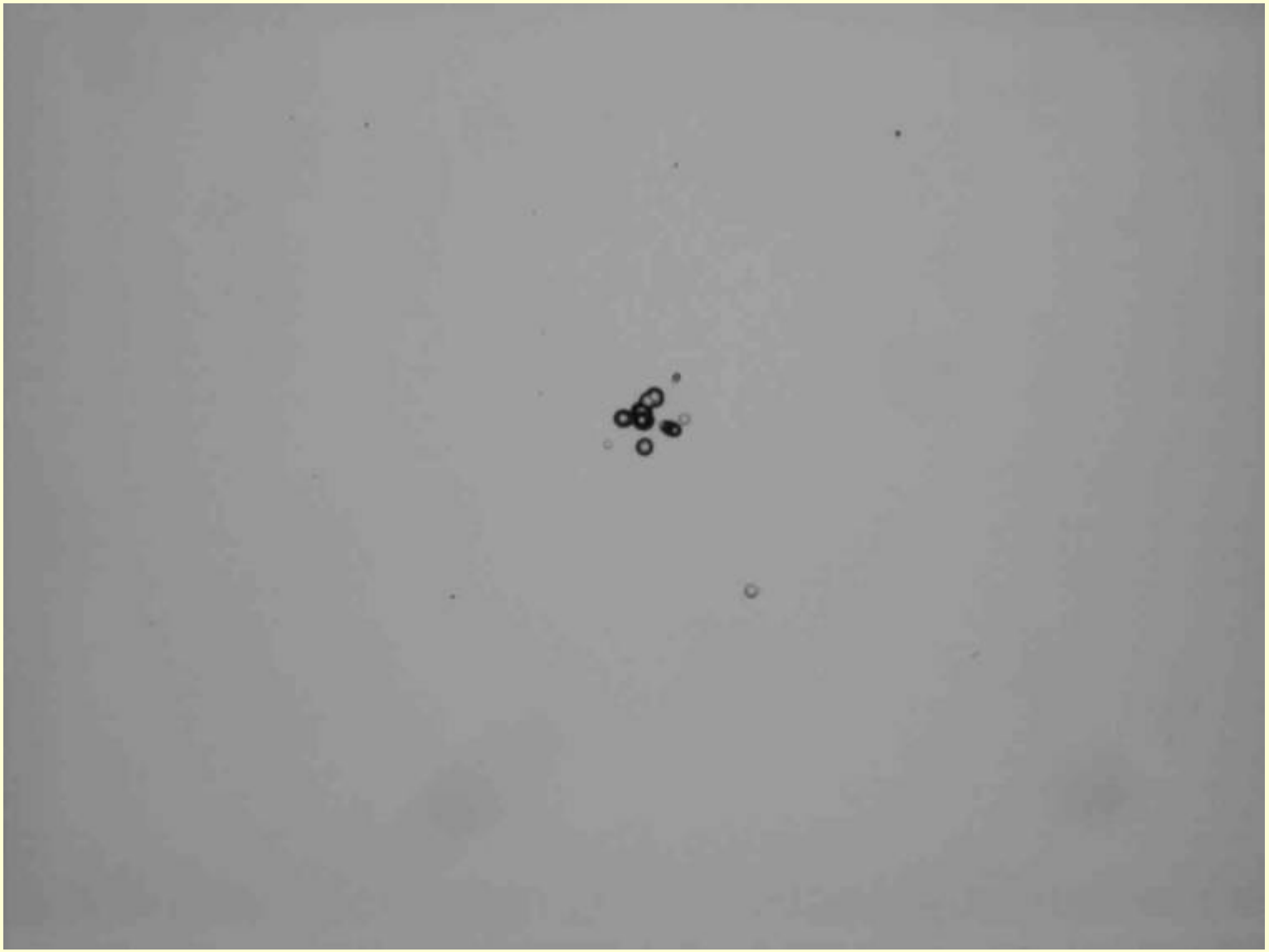
Cluster 2 from Experiment III



Cluster 3 from Experiment III



Cluster 4 (rosette) from Experiment III. Magn=400
Possibly an artifact (size of the cluster close to R).



In addition to electrolysis experiments I performed post-electrolysis experiments.

The purpose was to confirm residual activity (emission after electrolysis). Three clusters were produced in experiment VIII. But zero clusters in Experiments VII, IX and X.

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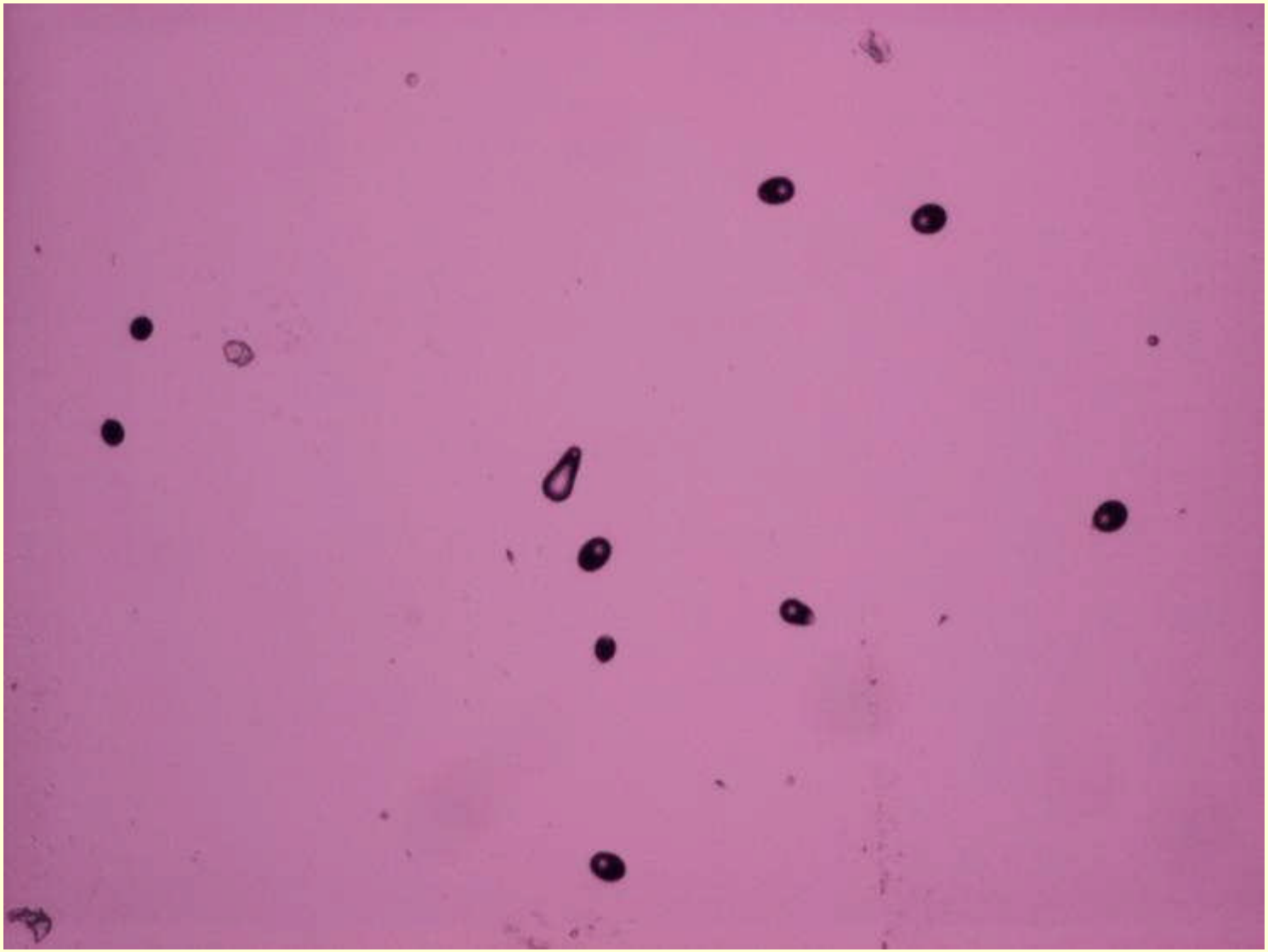
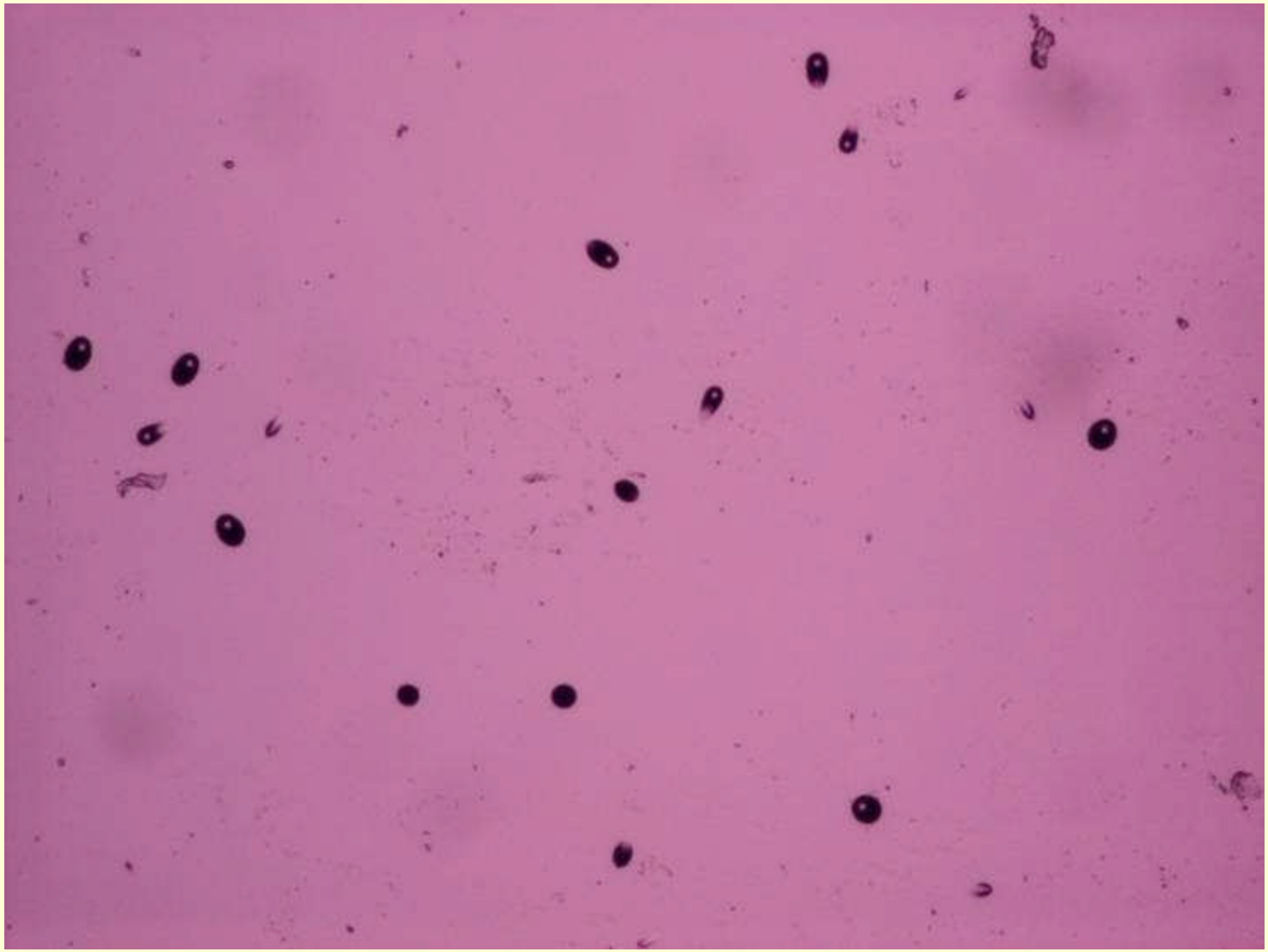
http://csam.montclair.edu/~kowalski/cf/335cat.html

A residual-activity experiment in progress.

Cluster diameter 6 mm, ~100 tracks.

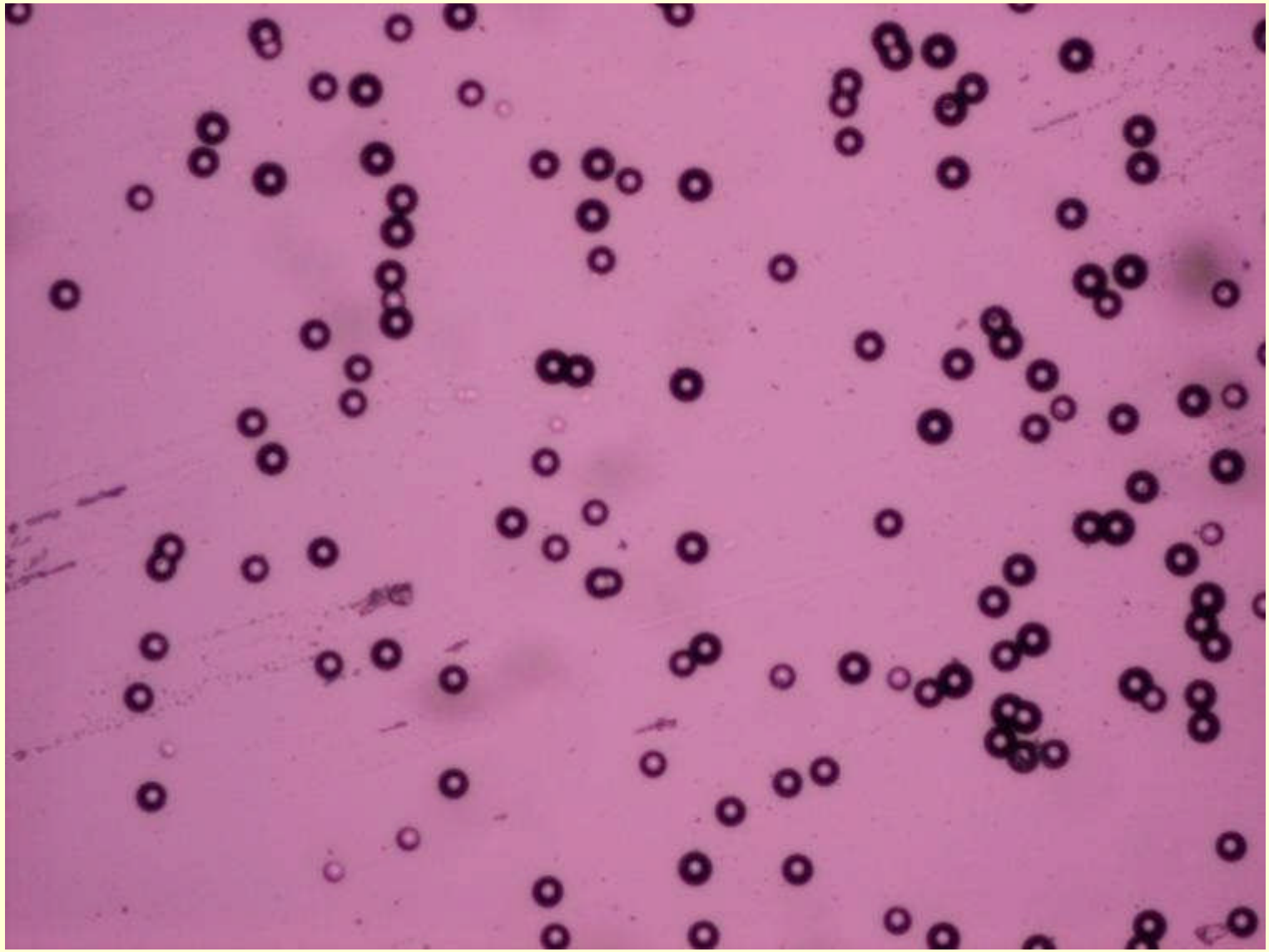


Cluster diameter 5 mm, ~60 tracks.

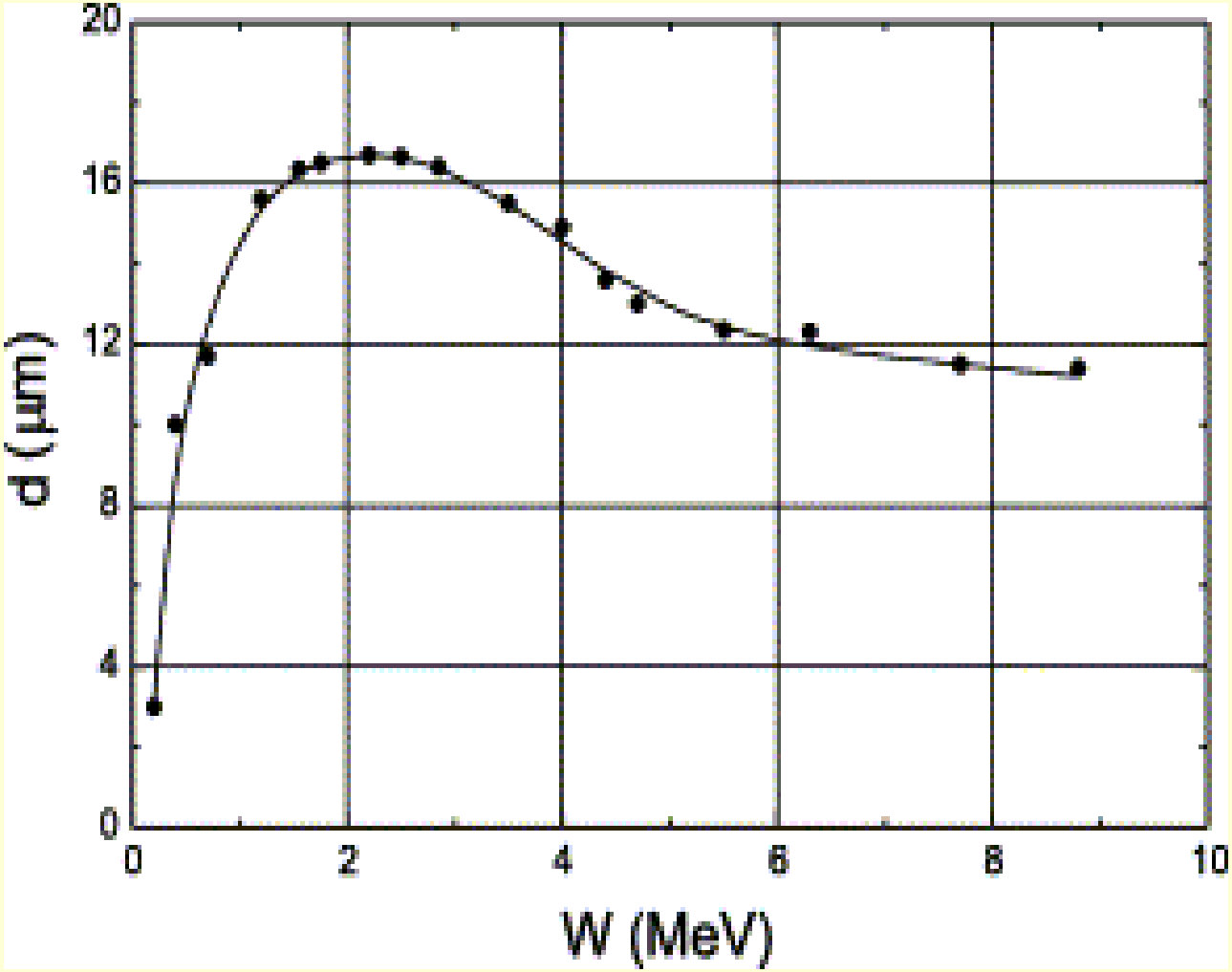


Cluster diameter 0.5 mm, ~13 tracks.

Alpha particle tracks are smaller.



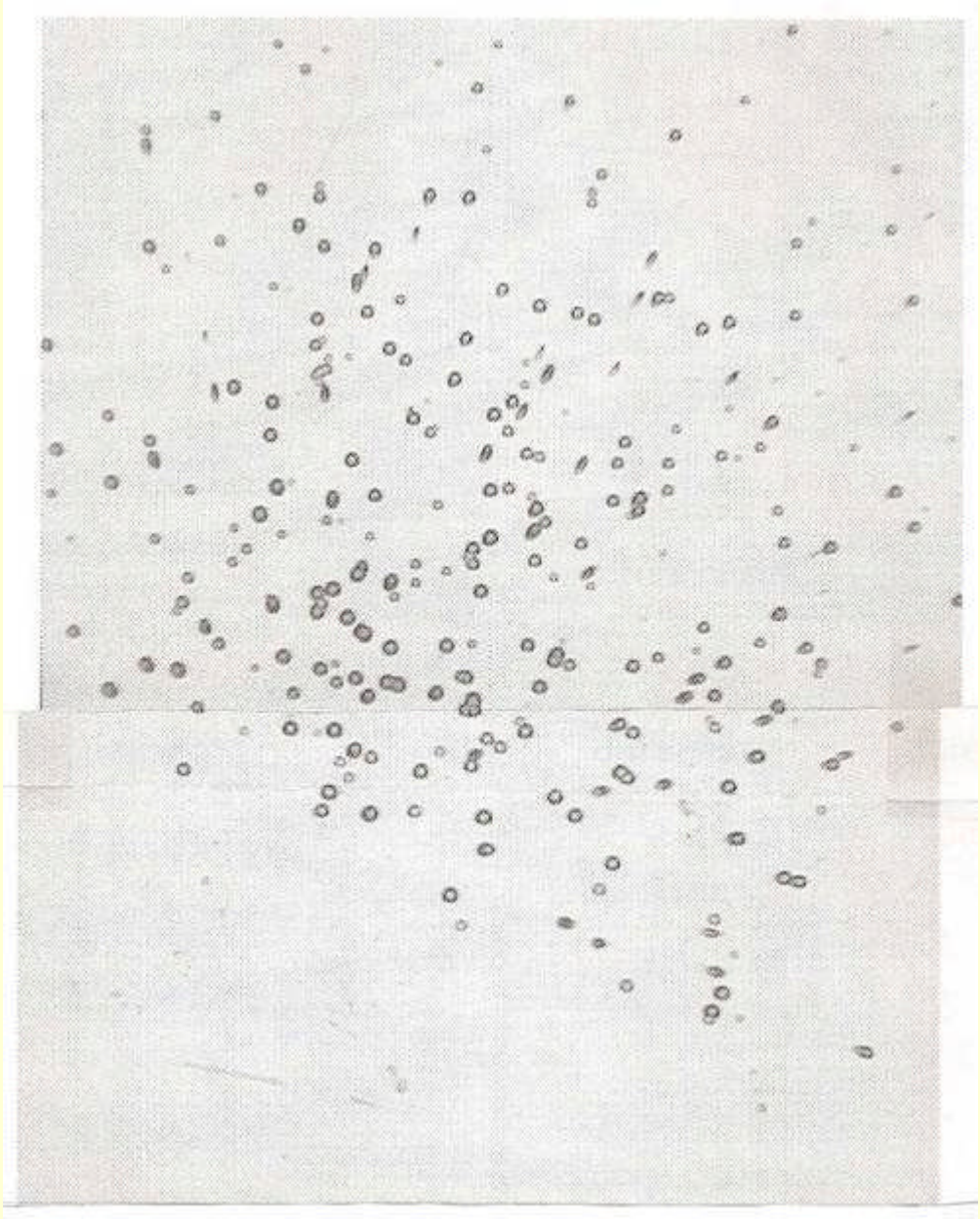
Dorschel et al. 2001 Track diameter, *d*, as a function of the alpha energy, *W*. Etching conditions: 7.25 N NaOH, 70 °C, 6 h.



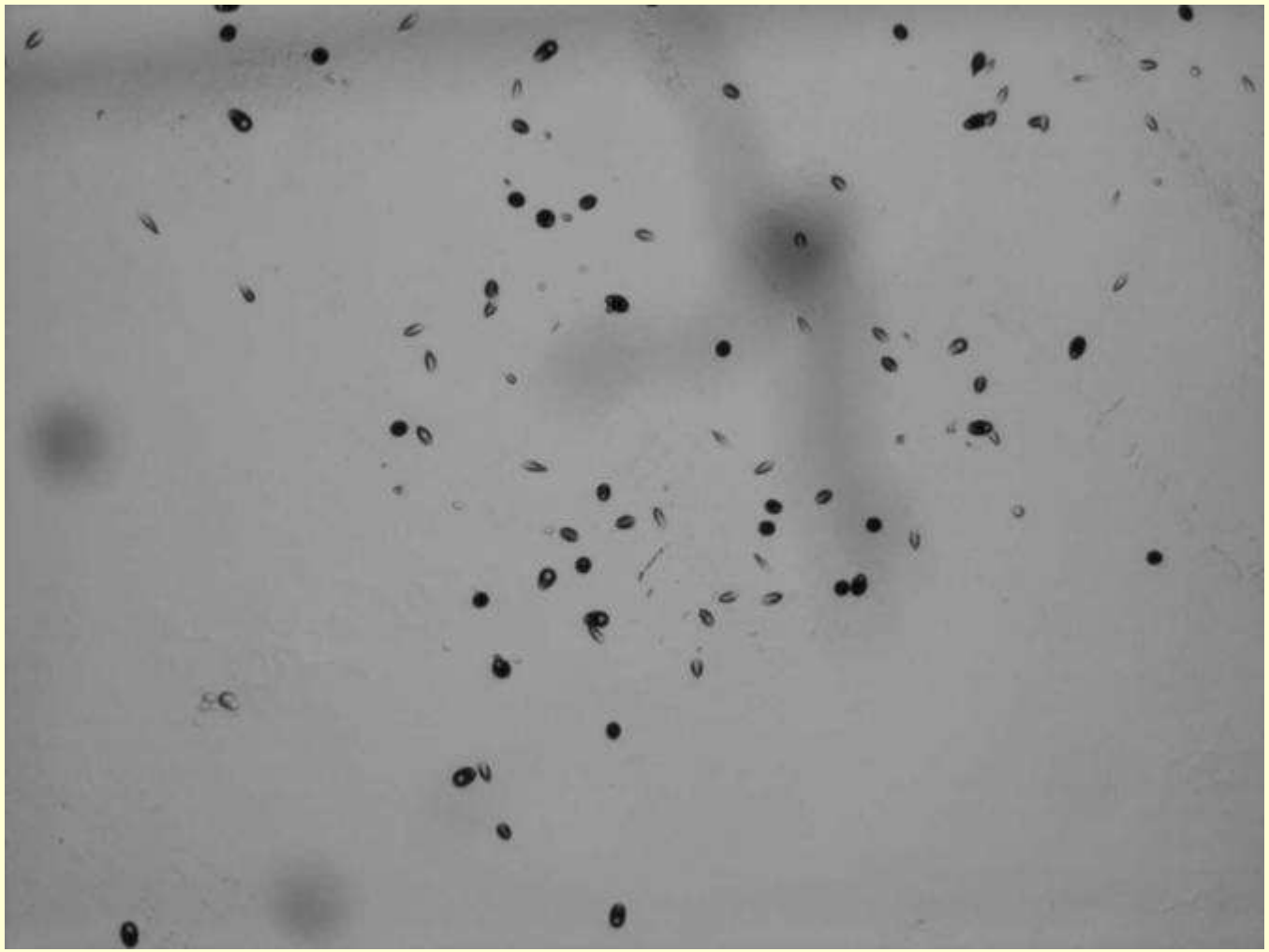
Let me end this talk by showing pictures of clusters sent to me by Richard Oriani, John Fisher and Marissa Little. ==>

http://csam.montclair.edu/~kowalski/cf/335cat.html

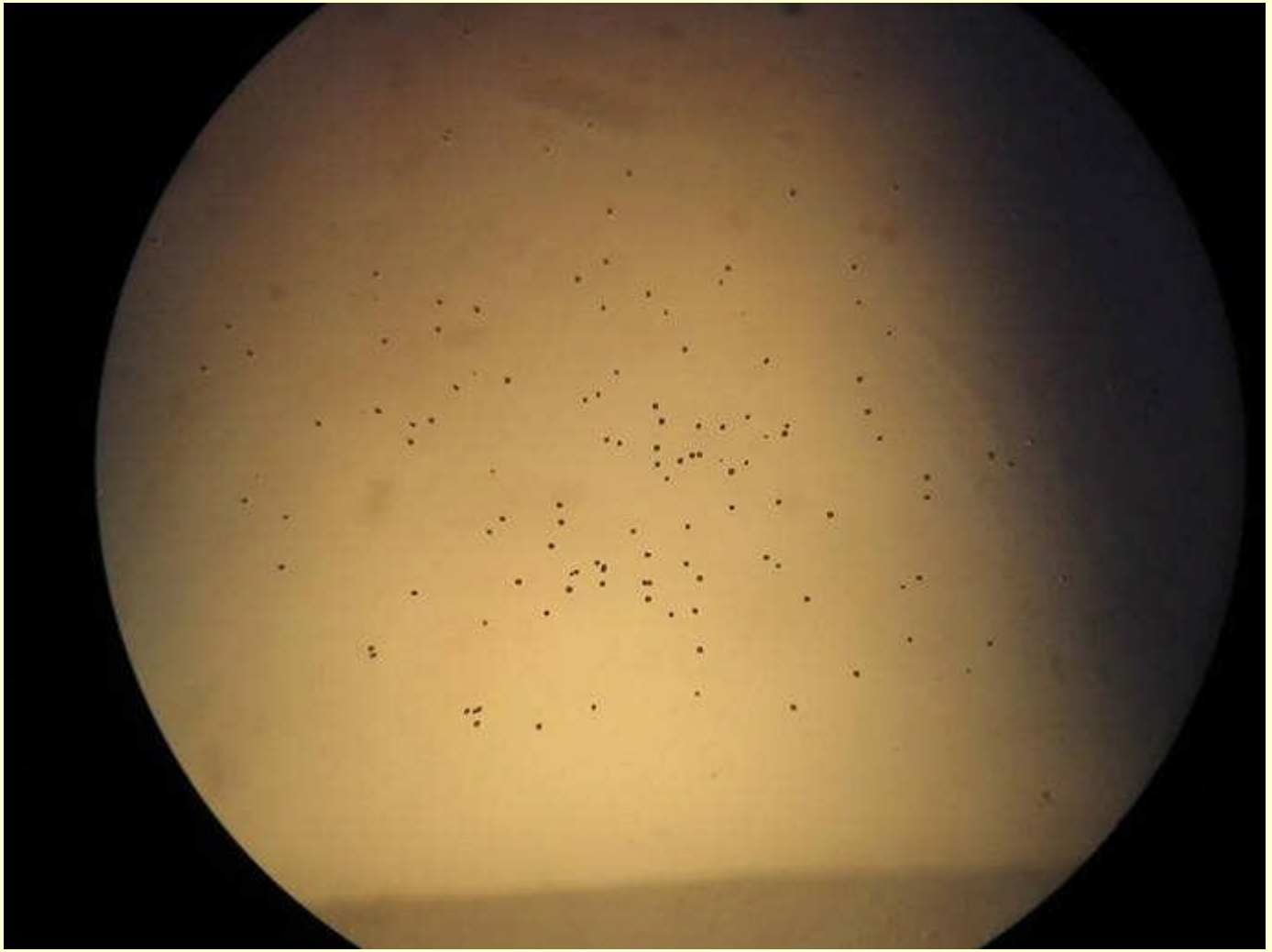
Other clusters produced during electrolysis.



A cluster from John Fisher



A large cluster from Marissa Little. This was the only cluster found in 30 experiments.



Absence of reproducibility ?

Yes, this is our biggest problem. But absence of reproducibility does not mean that a phenomenon is unreal; it means that we must learn how to control it.

Time flies

Thanks for listening.

http://csam.montclair.edu/~kowalski/cf/335cat.html

Write to me !

Comments will be appreciated.

Kowalskil@mail.montclair.edu

http://csam.montclair.edu/~kowalski/cf/335cat.html

CR-39 reference

D. Nikezic and K.N. Yub, in Material Science and Engineering, R46 (2004) p 51 to 123.

http://www.sciencedirect.com

Or ask me for the pdf of this paper.

Also numerous Internet web pages.

Issues with CR39

1) Why is background so large?

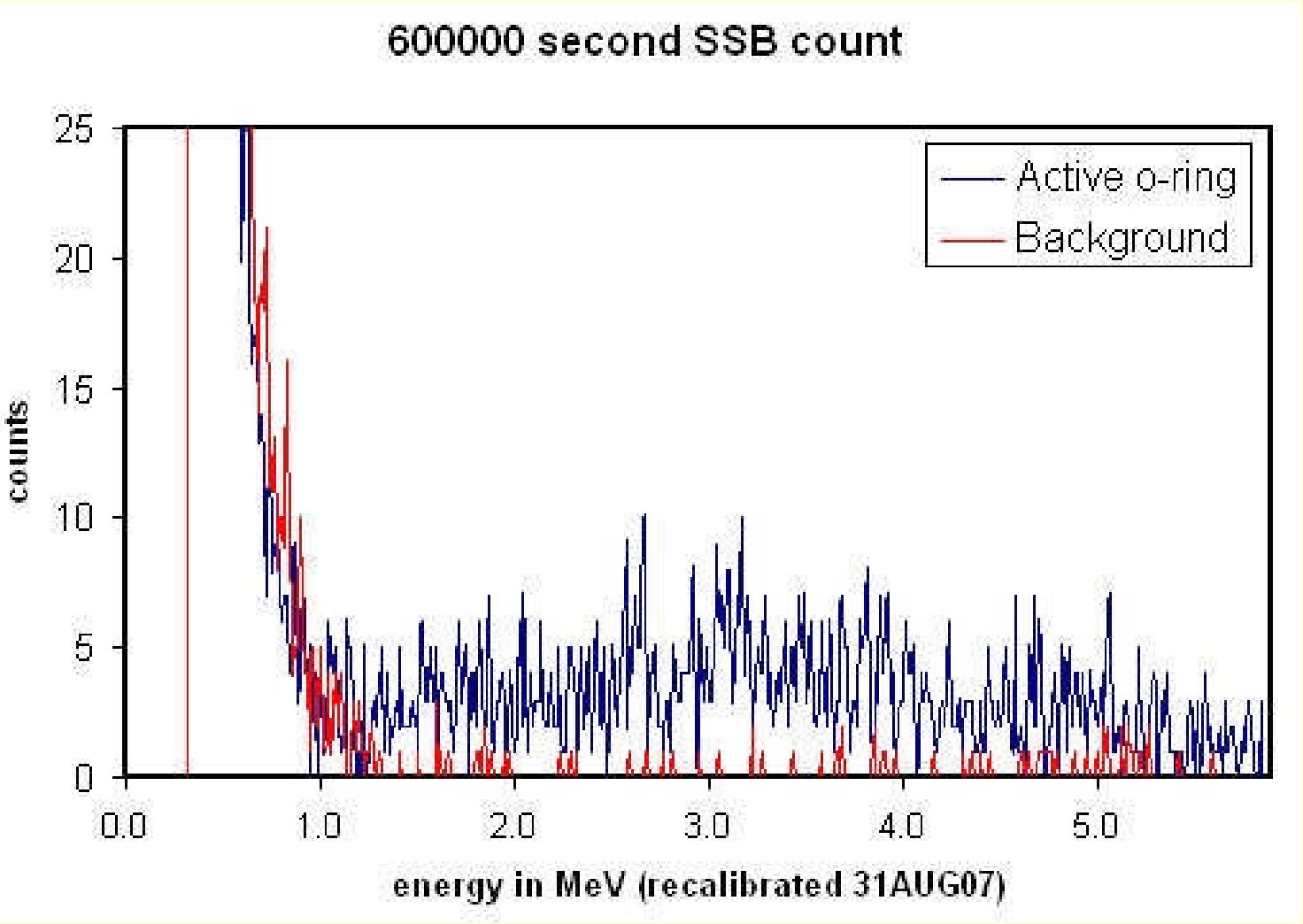
In Japan it was ~2 tr/cm^2

2) I suspect neutron irradiations at airports

A domestic manufacturer should be found. CR39 is used in lenses, welding protective shields, etc.

3) But the future belongs to Si detectors.

Little and Little spectrum



Si versus CR39

1) Si detectors give the energy spectrum.
2) Results can be seen before the end of electrolysis, for example, every 5 hours.
3) Identification of particles (p, d, t, a) during the experiment.
4) Cumulative ability is not lost.
5) But CR39 is uniquely suited for studying clusters.

What makes a person smart?

Many think that it is mostly reasoning ability. But I think that good memory is equally important. No one with good memory would doubt that new science is hiding behind several CMNS claims.

But most of us do not remember all the claims made under the CMNS banners.

Long live science !