

Gerald Pollack's Exclusion Zone water, Rob Johnson's electric bio-processes

Mikamar publishing made a DVD of presentations by Gerald Pollack and Rob Johnson at the Electric Universe conference in Las Vegas in January 2012. I had previously seen a presentation by Gerald Pollack at the Natural Philosophy Alliance conference in Maryland in July 2011, when I found his concept to be very exciting, albeit I didn't know enough to have confidence at that time. In a sense, I still haven't done my homework, but I do have some confidence in both Gerald Pollack and Rob Johnson, and right or wrong their ideas are tremendously stimulating and very useful in the context of “multiple conflicting hypothesis” that I like to maintain.

In order to maintain the original form of the emails, spelling mistakes have not been corrected. Names have been coded, as I do not have the permission of the individuals to state their names in third-party emails. My ideas are open source (see the licensing conditions), but I avoid putting down the ideas of others that may be considered to be proprietary.

The record here is not complete. Other communications and notes may be added in the future.

Enjoy,

www.BillHowell.ca

endpage

Waiver/ Disclaimer

The contents of this document do NOT reflect the policies, priorities, directions, or opinions of any of the author's past current, or future employers, work colleagues family, friends, or acquaintances, nor even of the author himself. The contents (including but not restricted to concepts, results, recommendations) have NOT been approved nor sanctioned at any level by any person or organization.

The reader is warned that there is no warranty or guarantee as to the accuracy of the information herein, nor can the [analysis, conclusions, and recommendations] be assumed to be correct. The application of any concepts or results herein could quite possibly result in losses and/or damages to the readers, their associates, organizations, or countries, or the entire human species. The author accepts no responsibility for damages or loss arising from the application of any of the concepts herein, neither for the reader nor third parties.

Copyright © 2012 Bill Howell of Ottawa, Ontario, Canada

Exceptions:

- All papers cited are the property of the publisher or author as specified in the books and papers.
- All information from conversations with other individuals are potentially the property of that individual, or of third parties.

Permission is granted to copy, distribute and/or modify ONLY the non-third-party content of this document under either:



The GNU Free Documentation License (<http://www.gnu.org/licenses/>); with no Invariant Sections, Front-Cover Texts, or Back-Cover Texts.



[Creative Commons Attribution-Noncommercial-Share Alike 3.0 Unported License.](#)

It is expected that users of the content will:

- Acknowledge William Neil Howell and/or the specific author of content or images on this page as indicated, as the source of the image.
- Provide a link or reference back to this specific page.
- Allow any modifications made to the content to also be reused under the terms of one or both of the licenses noted above.

endpage

Table of Contents

Jello Computing.....	4
Membrane separation processes	4
SAGD membranes : Gerald Pollack's "Exclusion Zone" water DVD.....	4
Pollack's EZ water & toxicology - how does snot work?.....	5
Electric Universe and forests, clay balls.....	6
Forrestry-related comments	7
Johnson's electric capillary flow hypothesis -.....	7
Pollack's EZ-water theory -	8
Plasma storms, not fires -	8
Other areas (very quickly & sparingly).....	9
Baked clay balls -	9
Dinosaur tracks -	9
Dark matter and energy, and the failure of the General Relativity Theory (GRT) at the galactic scale -	9
Non-meteoritic craters -	9
Birkeland current torque & tension : zero-order with distance? -	9
RE: Wild ideas !! - Gerald Pollack's EZ water -> Rob Johnson's counter-current, rotating pumping.....	10
Corrosion & Gerald Pollack's "Water Exclusion Zone" (EZ water).....	10
Random sampling of current thinking of water structure at surface (Nafion especially):	11
Some phenomena:	11
Biology	12
Corrosion	12
Book	12
NPA conference @ Uof Maryland 06-09Jul2011 : 5a. E-Z Water.....	12

endpage

Jello Computing

...Notes for future emails, 17Jul2012

Russell Eberhardt of Phoenix System (he was with the Uof ???) gave a plenary talk at the IEEE-CISDA conference 11-13Jul2012 in Ottawa (<http://ieee-cisda.org>), during which he showed a “Jello analogue computer”, based on the concept of resistive sheets (here in 3D by appearances) and driven by Particle Swarm techniques. My guess is that this was a linear system, but I'm not sure. In any case, it does bring to mind several concepts :

- Gerald Pollack's “EZ water” concept for hexagonal offset sheets of water near hydrophilic surfaces
- Gerald Pollack's references to gels and “colloid crystals” in relation to EZ water, with the potential of nano-scaled, 3d non-linear and “point-controllable elements”
- perhaps memristor style memory? (continuous, rather than binary state)
- Guangbin Huang (Nanyang Tech Inst, Signapore) concept of Extreme Learning Machines (feedforward neural nets) and ?name? Echo State Machines (recurrent neural nets) :
 - random fixed internal weights
 - trainable linear matrix output

This seems to be a very intriguing opportunity.

Membrane separation processes

...Notes for future emails, 17Jul2012

Reverse osmosis and related processes are obvious targets for an EZ water concept base – but much less interesting than biological membranes (including neuro-synapses).

----- Original Message -----

Subject: *SAGD membranes : Gerald Pollack's "Exclusion Zone" water DVD*

Date: Tue, 24 Jul 2012 18:36:12 +0000

From: Howell, Bill

To: [>SM<]

Ah Hah! I just remembered!! I lent the DVD to the "coffee bean & roaster" specialist at Bridgehead near Preston & Somerset. No wonder I couldn't remember. But he is gone to Halifax for a funeral, and he was to have passed it to the wife of the construction manager for the Bridgehead site. I'll see if it's around, but I suspect this won't happen until next week. On possibility is that as other January 2012 Las Vegas "Electric Universe" conference presentations have been posted to YouTube, that one may be there now as well...

I have a second copy that I lent a month or two ago Bryan Holleybone, retired Carleton chemist who is working on and off at a spin-off business "Ecovu Analytics" in Ottawa that I forgot to mention. As Holleybone has wonderful colloid chemistry, that may actually complement other water purification techniques such as knock-out -> membranes -> distillation -> colloid chem as higher priority is sought. I said that I wanted that back, but have not spoken to him since (it's out in Kanata, but it may be easiest for Holleybone to leave it at a local bar).

Closely related to Holleybone's colloids are gels, which I don't remember in the context of Ecovu even if some of the ideas bordered on this. "Colloid crystals" and the structure of gels (perhaps EZ water plus fibrous framework?) are described by Pollack, and this reminds me of a presentation two weeks ago at <http://www.ieeeottawa.ca/ci/cisda2012/>, where Russell Eberhardt described the use of "resistive sheet" approaches with Particle Swarms to the building of an analogue computer out of Jello!!! I thought this was awesome - and the use of colloid crystals at the nanoscale with non-linear or chaotic behaviours would fit right in with conventional neural networks, perhaps even spiking networks. I suspect that "Extreme Learning Machines" (ELMs - feed forward, Guangbin Huang) and "Echo State Machines" (recurrent nets - German scientist I forget his name) provide a mathematical basis for this.

A third related concept is Rob Johnson's speculative theories for :

- How sap flows from the root to the crown of a tree; and
- How blood flows in capillaries (if Johnson is correct in saying that blood pressure is inadequate for that. Even if it is, the alignment of platelets may be explained by Johnson). I mentioned that Clint Smith did look at the Pollack/Johnson DVD, and was "sympathetic" to the EZ water concept, albeit without having the analytical results he would need to form an opinion. Strangely, in spite of the circulation problems in his fingers, Clint did not have an opinion on Johnson's "electric plasma-like" phenomenological basis for blood flow in capillaries.

When you get the DVD, the "Exclusion" part of "Exclusion Zone" will immediately stick out with regards to membranes. Unfortunately, EZ water may apply only to relatively pure water, and not to normal or process waters, so that may severely restrict its relevance?

As I said earlier today, assuming that the EZ water theory is correct, then research in membranes (and all other areas) likely already accounts for the "EZ water" in a practical manner even if the theory is unknown. But even if incorrect, the concept may be useful for stimulating thinking and new approaches or combinations of approaches (especially mixing plasma-like electrical phenomena with the physical and electrical properties of the EZ water). In a sense, it seems that many comments on membranes still fall within the "contact angle" and "wettability" context, not often dealing with obvious "adhesion", albeit somewhat frequently "precipitation-adhesion" is discussed!

Bill Howell

----- Original Message -----

Subject: Pollack's EZ water & toxicology - how does snot work?

Date: Thu, 21 Jun 2012 14:33:49 +0000

From: Howell, Bill

To: [>SL<]

Maybe a direct example of your "bacterial exclusion" musings could be mucous linings, perhaps tied in

with Pollack's comments on "colloid crystals" and gels, Bryan Hollebone's (www.ecovu.com) colloid chemistry, and electrically-assisted cilia/ hair movements of mucous material as a cleansing action. Any metal-born species effect on that could be relevant to toxicology both in terms of inorganic & organic molecules and colloids, but also in its affect on [viruses, bacteria, microbes, fungi, etc]. Speculatively, perhaps that could be related to breaks in mucous coverage, "anchor points" for bacterial/ microbial communities, and electrical/ electronic effects at membrane surfaces. Also, if metals can affect the electrical conditions associated with ion channels, and if this can be related to changes in the electrical properties of the EZ layer, then one might expect seious effects by dysfunctional transmembrane ion transport. Maybe snot can actually be a sexy topic?

Some time ago I read an interesting article about the "primary immune systems" (swelling etc), which are critical to reducing "breaches" by pathogens. While the Killer T lymphocytes get all the fame and fglory, the primary systems are apparently doing most of the real work, and problems there are hard to compensate for. I don't remember much about mucous systems.

I suspect there are a lot of concepts in Pollack's book on cells and biology, which I've intended to buy for some time (and will "soon"). But the book is, if I remember correctly, already quite old and a lot has happened since then. I also have to get back to Holleybone, but I suspect that he can't say much. On a completely different subject, I am curious as to whether any groups have adopted his "colloid trap discs" (I forget Ecovu's term for them) which, unlike filters that clog badly and quickly, allow for the longer term "capture" down to extreme levels of colloids an many if not most "solutes" in water systems for in-field simple analysis for tracking purposes (eg hand-held XRF, and ?IR or whatever? Wands), and later special analysis in labes. Potential advantages for remote sampling were suggested by Ecovu :

- Rapid field re-location of sample draw points to better locations of to follow-up on "hot spots" or anomalies (could save years of hit & miss?)
- Dramatic reduction of whole water samples that don't have to be carried on planes etc
- Other points that I forget now

Many advantages were similar to the ion resin technique. I suspect that both approaches miss components that the other catches, so maybe a hybrid approach would also have advantages (and provide independent datasets just in case one misses a key anomalous compound/species.

Bill Howell

----- Original Message -----

Subject: Electric Universe and forests, clay balls

Date: Wed, 30 May 2012 16:34:32 +0000

From: Howell, Bill

To: [>MS<]

CC: [>CJ<]

No Action Requested : for your information only

Mike - I dropped off two DVDs with ?name? (in cubical diagonally across from yours) :

1. Gerald Pollack - Role of Electric water in the body ; & Robert Johnson - sap in trees & blood capillaries
2. Wal Thornhill - Stars in an electric universe (watch this in bits of 5 to 10 minutes each - it's radical and profound)

Notice that I did NOT drop off the DVD on Electric Discharge Machining (EDM) of Mars (plus other hard rock moons, planets), as I couldn't find it (I think it is in one of the boxes I've already put in storage, preparing to sell my house). However, if I remember correctly the Thornhill DVD does have some comment about planetary scarring and craters by EDM. One advantage of the Thornhill DVD is that it is a more general introduction to the Electric Universe (actually, electric star) theories, but if I remember correctly is thin on mythology (the "other part" of the Electric Universe greater concept). Don't do like me and completely ignore the mythology side, as I've eventually concluded that while all scientists discredit them, it is in the end scientists who have discredited themselves on their own terrain and in their own areas of expertise.

Below, I've attached a few random, scattered comments related to forests, instantly-baked clay balls, and odds and ends.

Craig - I've copied you, as you may have thoughts to add, given your fresh eyes and mind, and recent university education. You should see Mike's baked clay balls - collected locally, I think?

Bill Howell

Forrestry-related comments

Johnson's electric capillary flow hypothesis -

My original reason for contacting you was in relation to a very early-stage and incomplete hypothesis for how water might be transported from root to crown. In the distant past (decades ago - long before running into any EU stuff) I had heard that conventional theory might not be an adequate explanation. Apart from the simple need to explain sap flow, I did mention the "counter-current flow in a single capillary" potential for perhaps recycling solutions with solutes etc, and perhaps one or two more concepts that I forget at the moment. I won't say any more other than to start with Pollack's DVD FIRST! I should also state that I've had long conversations and exchanged emails with Rob Johnson, and know him more for his investigative work to show that ALL interferometer results refute Special Relativity. (That's a completely different subject).

- Solute species separations (Na, P, Ca, metal ions etc)

- Heart attacks, brain strokes, mental processing / alertness, industrial mishaps - Here there are tie-ins with the Russian research that I emailed to you on geomagnetic (Forbusher - hours to days) and solar (includes geomagnetic, but here sunspot 22 year cycle, 11 year half-cycle) influences
- Loony full moons? - All statisticians and scientists claim there is NO significant effect of the full moon. All nurses and many policemen know otherwise.
- Markland convection in plasmas - yields elemental (ionic) separations according to ionization potential. According to some, this is predictive of the elemental distributions of planets in the solar system, and of stars along the radial arms of galaxies.

Pollack's EZ-water theory -

The seems to be almost no end to the potential unproven and lunatic biological implications of Pollack's concept :

- Transmembrane solute (inorganic and organic) transfer and separation - This includes the subject of the functioning of cell membrane ion channels, and energy potentials for solutes. I am currently doing a literature review of reverse osmosis or ultrafiltration membranes for SAGD oil sands (Saviz Mortazavi), and this might be directly applicable.
- Neurotransmitters, neuron firing, glial cells as chemical management and information processing - as my main hobby interest is neural networks, this is of great interest to me
- Water batteries - just as a really crazy idea, if Pollack & colleagues can build water batteries, who's to say that biology hasn't. In that light electric eels (and other animals - I forget which) immediately come to mind. Huge potentials can result from a large number of cells - something that biology may be very good at!?!?! Perhaps mechanisms like this are key for photosynthesis (in addition to conventional biochemical pathways)?

Plasma storms, not fires -

Here's a crazy thought for you. Fire-fighters and forest fighters know that great fires don't correspond what we normal people think of them - you have to experience them to appreciate that the word "fire" is perhaps inadequate. The EU context brings together many themes related to forest fires, although I'm not sure where that might lead :

- Atmospheric electric-structure and processes - Fire pre-conditions, initiation, and fighting could be greatly affected by a completely different perspective. The atmosphere has huge electrical structure, that can morph very quickly (eg with solar storms and intense geomagnetic activity). One tiny example - a candle flame burns horizontally (NOT vertically) in an electric field - which completely overwhelms gravitational buoyancy effects as one should expect.
- Geomagnetism and its influence - if I remember correctly, I had a graph of forest fire frequencies-extent over 10 or 50 years, with clear indications of the same sorts of power-spectra signatures that one expects from astronomically-driven-or-influenced processes.
- Great Chicago fire of 1871 - I think it was one of Velikovsky's books (or a follower of his ideas) that pointed out the huge, strange behaviours of that fire, including prewarnings, burning behaviour-locations-distributions etc.

Other areas (very quickly & sparingly)

Baked clay balls -

A "flash, high-T formation" of baked clay balls that you are interested in, even encompassing shells and fish etc, could easily be a product of the Electric Discharge Machining (EDM) process of the EU theories.

Dinosaur tracks -

Following up on comments from others that we discussed the other day, the dinosaur footprints may have been cooked instantly by intense heat. EDM is one mechanism, but so would an intense forest fire - which is essentially a local plasma storm! If you look at the footprints as being made by dinosaurs running away from a catastrophe, then extend your mind in the direction of the tracks If someone follows the tracks, they might just find "Kentucky Fried Dinosaur".

Dark matter and energy, and the failure of the General Relativity Theory (GRT) at the galactic scale -

As I mentioned the other day, Shaviv & Veizers 2004 paper on the ~140 My grand swings of climate brings out the relative angular motion of the solar systems versus the spirals of the Milky Way galaxy. While they look at spirals as "compression waves" of stars, EU explains them as easily described and testable Birkeland plasma currents that do what one finds with models. But I haven't heard someone say (although I assume it has been analysed!) that this could explain away one of the great anomalies of GRT - that the stars aren't moving fast enough, or that the linear-with-radius velocity conflicts with models. Ergo - invent dark matter and energy. Perhaps this relative motion was already taken into account by those analysis, or maybe GRT is even worse if you do take into account the relative motion.

Non-meteoritic craters -

As I mentioned, many if not most craters on some planets and moons were NOT created by impact meteorites nor volcanoes. EU's Electric Discharge machining (EDM) does provide a possible hypothesis. Right or wrong, it certainly stimulates thinking, and rejection of the OVERWHELMING scientific consensus of perhaps 100 years. The "non-splash-back cones" are damning evidence of anomaly-suppression by essentially all scientists in the area. Many other features were described for Mars on the DVD I couldn't find.

Birkeland current torque & tension : zero-order with distance? -

This is my main home hobby objective for now, as the implications for physics, astronomy, Earth processes (climate, oceanography, history, pandemics, population dynamics, seismic, wars, accidents etc etc) are HUGE (read complete revolution!). Predictability could become insamnelly better (not ignoring the remaining unpredictable).

endemail

----- Original Message -----

Subject: RE: Wild ideas !! - Gerald Pollack's EZ water -> Rob Johnson's counter-current, rotating pumping

Date: Wed, 11 Jan 2012 18:50:12 -0500

From: Bill Howell. home email. Ottawa <Bill@BillHowell.ca>

To: [>PS<]

I was putting my tongue in my cheek, so as not to mislead you about yet another "Wild idea" and have you waste your time. However, I will be tracking the concept as it is extremely interesting. At work today, I took a quick look at Wikipedia for sap flow, which showed a very old concept to do with capillary forces (wetting) and transpiration if I remember correctly. I had remembered from the distant past comments to the effect that capillary forces couldn't do that for several hundred feet of tree. I've never checked that critique, and still feel that capillary forces (wetting) and maybe one or two other tricks might suffice - kind of like a set of multi-stage reservoirs with small lifters between. But whether that's enough, or even a good conception...

The "wild idea" starts with the "Exclusion Zone" (EZ) water of Gerald Pollack (I give a primitive summary in an work email attached below). Rob Johnson of the UK extended this to counter-current, rotating currents for blood and sap flow. In other words the "pumping" occurs electrically. Pollack shows this works for a stationary tube in a beaker with NO external current supply. Although this does sound like a perpetual motion machine, it does use energy and run down. Photons "regenerate" that energy - what the form is I don't know - perhaps Rhydberg electron states or molecular deformation in the hexagonal EZ water sheets. Biology can provide energy in whatever form required all of the way along. Obviously I don't know what I'm talking about here - which makes it even more interesting and intriguing for me!

I saw this at the "Electric Universe 2012" first annual conference in Las Vegas last weekend.

Bill

----- Original Message -----

Subject: Corrosion & Gerald Pollack's "Water Exclusion Zone" (EZ water)

Date: Wed, 11 Jan 2012 15:16:45 -0500

From: Howell, Bill

To: [>SP<]

CC: [>WR<]

Action Requested:

- None - for your information only

Last July, I think I mentioned in person or over the phone to at least one of you that Gerald Pollack's version of the concept of structured water at interfaces may be of interest to corrosion. I just came back from a "vacation conference" (out-of-pocket-after-tax, vacation time) and saw part of another presentation by him (no proceedings will be produced - slides only which I don't have and which I don't think he released). Brief notes are provided below, but I have to say that I didn't pursue the chance to ask about corrosion specifically. Most of his work is with very pure, de-ionized water, so it's practical relevance may be limited.

Bill Howell

Random sampling of current thinking of water structure at surface (Nafion especially):

- Shades of past controversies:
 - Boris Derjaguin, a Russian who proposed polyweater in the 1960's, but now looks vindicated
 - Water memory - Pollack made a quick comment on that last summer, too
- Flat, hexagonal (honeycomb) arrangement of water molecule layers (not dipoles!)
- Form with HYDROPHILIC surfaces
- Net negative charge of EZ layers (very sparse negative charges, I assume, rather than whole molecules!) versus net positive bulk water
- EZ layers can extend VERY far into water (millions of layers - 250 to 400 micrometers with right surface (eg Nafion), deionized water, whatever)

Some phenomena:

- EZ zone can be used as a battery (micro-amperes), and recharges with incident light!!
- A Nafion tube, open-ended with NO applied voltage, mechanical activation, spontaneously pumps water in a beaker until "exhausted" (i.e. presumably recharge with light thereafter)
- "Water bridges" (cylinders of water) can connect two beakers of water with ?10 kV? Applied (must be non-conducting water, one would think!?)
- "Mosaics" build from drops/bubbles and may extend down (I didn't capture this concept well - when I think of mosaic, I think of "colloidal crystals" - structured collection of droplets, but I forget the mosaic images that he used)
- It appears that "convection cells" (Bernard cells?) in warming liquid beakers are released as vapour structures into the air!!! This is somewhat similar to the "nodules" in the sun's photosphere (or chromosphere - I always mix these up) and other processes of course
- How do clouds stay suspended in the air? (This question wasn't really and EZ water comment -

or was it, in the sense that it may explain strong charge distributions in neutral water droplets/micro-droplets)

Biology

- Membrane comments were made by Pollack, but I didn't take details
- Processes like blood flow in capillaries, and sap flow from root to tree-top were covered by a separate speaker, but using a special model of electric forces that were assumed (wishful thinking right now - but very interesting)

Corrosion

- I wasn't thinking of corrosion and didn't pursue the question, but it strikes me that both bio and chemical corrosion processes could be influenced by an EZ zones, if that exists in real environments.

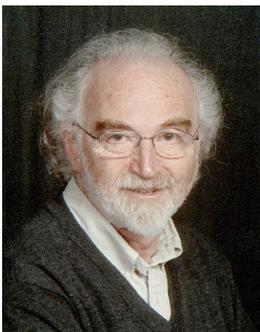
Book

- Gerald Pollack ~2000 "Cells, gels, and engines of life"

endemail

NPA conference @ Uof Maryland 06-09Jul2011 : 5a. E-Z Water

This is from <http://www.billhowell.ca/Electric%20Universe/Howell%2005-08Jul11%20NPA-EU%20conference%20notes.pdf>



Gerald H. Pollack, Uof Washington, Seattle

<http://depts.washington.edu/bioe/people/core/pollack.html> "The secret life of water" (no paper in NPA proceedings)

Pollack gave a fascinating presentation on Saturday morning during the open session of demonstrations, audio-visuals, and displays. The following material is therefore from memory and without handwritten notes, so there will be substantial errors. He has published many papers and books, for example here are three of those listed by www.amazon.com :

- Gerald H. Pollack 24Nov10 "Water and the Cell"
- Gerald H. Pollack and Wei-Chun Chin 19Nov10 "Phase Transitions in Cell Biology"
- Gerald H. Pollack 10Mar01 "Cells, Gels and the Engines of Life"

The core idea is the presence of a "pseudo-crystalline" (my words) layer of water at interfaces that extends far further into the water than previously thought (order of millimeters or perhaps almost a

centimeter at most – depending on surface, water, and impurities). Russian scientists had measured and suggested this decades ago, but were ridiculed by Western scientists. The water is NOT in the form of packed dipoles, but instead is arranged in the form of hexagonal “honeycomb” sheets. The “pseudo-crystalline” layer near the surface/interface is called the “E-Z zone” by Pollack (?Extended Zone?), and has a net negative charge. There is a positive, H^+ - based charge in the bulk water.

There were too many details to recount here, so I'll just list a few points:

- “lattice-like defects” can occur in the honeycomb layers, which tend to propagate outwards to the interface with the bulk solution (or “sideways” along the E-Z). “Memory-like” defects have been seen, such that when emptying a beaker then filling with fresh water, the new water can “remember” prior conditions. A comment was made about DNA, but I can't remember the details.
- Nafion is a particularly good surface for generating thick E-Z.
- Our traditional understanding of surface tension may depend to a large degree on the behaviour of the E-Z, as opposed to merely one or two atoms this layer at an interface. Examples shown were a US dime “floating” on water, and an intriguing “water drop-tube” suspended between two beakers.
- The surface-to-bulk potential have been used as a battery that generates nano-ampere currents in a beaker. Of course, these diminish with time as the E-Z zone depletes or (it is speculated) H^+ builds up at the E-Z / bulk interface. However, if left alone, the E-Z zone rebuilds, which was very perplexing to Pollack's team, as the energy had to come from somewhere. They now feel that it is recharged by light (UV preferentially?). Sounds like an alternative solar energy source – as opposed to photo-voltaic or solar concentrators (or plants and biofuels, or, ultimately winds and hydro etc, etc, etc!).
- Colloids are a phenomenon that has been studied in association with E-Z zones. If I remember correctly, “colloid crystals” may be stabilised somewhat by the E-Z.
- The implications for biology (membranes, intra-cellular etc) are big. I missed a lot of the detail here (I was mainly watching a demonstration of an electromagnetic machine).
- I did ask what the implications for toxicology might be (especially with the colloid connection). I don't remember specifics, but my impression is that they have thought of this, but their team hasn't done a huge amount of work on it.
- There was a great deal of interest from the crowd (even though the conference was dominated by physics enthusiasts – but it seems that quite a few “outsiders” also attended because of Pollack's reputation.