

What's wrong with the field of bio-neutron scattering? (2014)

1) **Not enough professional science and not enough professional scientists:**

Quality sucks. Many publications in the field contain major errors, most of them are totally irrelevant to biology. The field is closed, there is little competition from outside. Strange models are popular (diffusion inside a sphere) which are unknown in NMR, DR or are methods. No special knowledge is required to get beam time, to perform an experiment, to analyze data and to publish a paper in this field. Anybody can do it! The most detailed analysis of bio-neutron scattering data up to date (Doster, Settles, BBA 2005) is rarely cited, because it cannot be understood by the majority of the workers in the field: It was omitted in the list of relevant papers by M. Weik. Moreover, high scientific quality can be extremely dangerous to authors, since it threatens the majority of mediocre scientists, which live a comfortable life in this field.

The bioneutron community is focused on elastic scattering and elastic elastic mean square displacements. It is fast and easy to do like "low angle scattering". No special knowledge is required. The literature is thus flooded by "displacementology" papers. It took at least 10 years, until it was realized that displacements carry a time tag, that one motional component is due to methyl groups. We showed in 1996, how to derive time-resolved displacements from a model independent moment analysis of the neutron scattering spectrum (Doster, Settles Far. Disc 103). Up to now nobody, not even MD people, picked up this major advance of the field. Too many colleagues just "play" science, without being interested in the truth. What counts is to get published in a major journal, right or wrong. Scientists can be right or wrong, I know several colleagues, who can never be wrong. A scientific discussion is not possible.

2) As a result, there is practically **no scientific discussion**. A prominent colleague said to a young scientist: "In your last paper, you said, I was wrong." "Weren't you wrong?" "Yes, but you don't say it".

Critical discussions are often discriminated as personal attack and could lead to rejection of a manuscript. The referees wrote in their report to one of our recent papers:

"Even if the opinions of the authors are correct, regarding various neutron scattering studies and how data is treated, it is not necessary to attack persons (authors). For instance (names of incriminated scientists)...such should be removed or rewritten.."

3) The field is **technically below the stage that was achieved in 1989**. At that time we introduced **the dynamical transition** using inelastic scattering. Only the small part concerning elastic scattering and the displacements were picked up by the community, which is with some exceptions the status of today in 2014. Moreover, we determined elastic displacements by fitting the complete elastic scattering function to a model.

Later most authors adjusted the data with straight lines. They are completely unaware of the limitations by the quasi-elastic background, multiple scattering and extrapolation to low Q.

- 4) The field is now **dominated by a few leading figures**, which have pushed out most serious workers. The referee system of major prominent journals has been corrupted. This is easily possible, since there is no real competition left. To select the critical referees and to exclude them is easy, since they can be spotted by their remarks. The authors then discriminate the referee's work and suggest "personal interests". Then the paper goes through. This works very well with embedded authors. There is a mutual agreement, I let your papers pass and you let my papers pass. "I have a different opinion, but why should I reject the paper for this reason?"
- 5) **Citation behavior:** Instead of just citing the really relevant work, which would concern previous neutron scattering studies or MD simulations, the list of citations is often meant as a fingerprint: I belong to this group. Frauenfelder's (unreviewed) PNAS papers usually lead the citation list of a particular group. Check the papers of major authors of bio-neutron scattering, whether you will find citations of the current Nobel prize winners in Biomolecular Dynamics. I doubt it. That's what's wrong with this field.
- 6) **The Frauenfelder revolution (2017)**
Since 2011, in a series of PNAS papers, the trio Frauenfelder, Young and Fenimore revolutionize the field of Mössbauer spectroscopy and quasi-elastic neutron scattering of "complex systems" with a simple, almost primitive model, the energy landscape. Even the well-established scattering theory is discarded to support this model. These papers are a dangerous mixture of obvious nonsense and straight plagiarism. The trio has no experience whatsoever with neutron scattering and ignores the literature, which would disprove their simple ideas. They reorganize and modify published experimental data, without contacting the authors. Except a critical comment by Joachim Wuttke, there is no reaction of the field to this profound reinterpretation of scattering theory. Most confusing some workers in the neutron scattering field, Kneller, Mamontov and Pynn act as pseudo-referee for PNAS, promoting the publication. Frauenfelder has enormously damaged the field of bio-neutron scattering with ideological papers. I accuse the colleagues who work in this field without reacting properly, corrupted by the Frauenfelder network.