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Journal Name:	International Research Journal of Pure and Applied Chemistry
Manuscript Number:	2014_IRJPAC_13156
Title of the Manuscript:	Delayed Shifts in pH Responses to Weak Acids in Spring Water Exposed to Circular Rotating Magnetic Fields: A Narrow Band Intensity-Dependence
Type of the Article	Original Research Article

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<u>Compulsory</u> REVISION comments		
<u>Minor</u> REVISION comments	#1 Figure 5 seems to have two plots superimposed with identical small circles representing them - I wonder if it's supposed to be in color? #2 I'm having trouble understanding the significance of the very last sentence: are you referring to the time for an average rotation of a water molecule? A cluster of water molecules? @ LINES 323-325; a clarification would be helpful (at least to me). #3 @ ca LINE 313: the H-bonding of the second hydration sphere is hugely-important. This goes perhaps to Davidian's NIR work with perchlorate salts as a model for solvent separated versus contact ion pairs of aqua cations and biosulfates, perhaps? Structure of Aqueous Solutions of Group IIIA Metals Perchlorates by Near Infrared Spectroscopy ISSN 1070-3632, Russian Journal of General Chemistry, 2013, Vol. 83, No. 3, pp. 415-422. © Pleiades Publishing, Ltd., 2013. Original Russian Text © A.G. David'yan, A.G. Kudrev, L.A. Myund, M.K. Khripun, 2013, published in Zhurnal Obshchei Khimii, 2013, Vol. 83, No. 3, pp. 359-367. DOI: 10.1134/S107036321303002X	The error has been corrected An extra phrase has been added to clarify the concept. We read this paper but we are not quite sure how it applies to our research. Thank you for the suggestion.



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	#4 @ ca LINE 303: bicarbonate ion is clearly not the only relevant anion, in vivo, in various “compartments”, especially in the acidic pH range compartments. Can you predict ion specific effects of the magnetic fields? Hofmeister effects? #5 Nada Verdel, et al has published recently on thixotropic properties of water. I think your paper would be enhanced by including citations to Verdel’s work. The “holding effect” which you observe might represent thixotropic property of water, yes? Verdel, N.; Bukovec, P. Possible Further Evidence for the Thixotropic Phenomenon of Water. <i>Entropy</i> 2014, 16, 2146-2160. #6 Can you liken the “holding effect” observed in this study with the thixotropic property of biological (interfacial) water? #7 @ LINES 72-74 you suggest that interfacial water layer “thickness” was modulated by the magnetic field, yes? That’s interesting because Gerald Pollack has shown that the “thickness” can also be modulated by IR frequencies. So, perhaps both IR and magnetic fields modulate layer “thickness”. #8 this paper might cast a new light on Grotthuss-style proton hopping, i.e. do magnetic fields modulate “proton hopping”? #9 You mention the “hydronium ion” multiple times. Does your data suggest Grotthuss “proton hopping”? If so, might eigen or zundel cations be involved? How certain are you that a “radical-cation” of water is not involved? Voeikov and DelGiudice mentioned a “radical-cation” of water in Water Respiration - The Basis of the	Yes, you are completely correct. The examination of the other ions potential contributions are for other experiments. No, we did not pursue Hofmeister applications. Thank you so much for the reference to the Thixotropic properties. The two articles were very interesting and quite applicable to the bulk of research with water. It may explain why agitation of our samples after more than 10 days of exposure to related magnetic fields attenuated the fluorescent spectrophotometric shifts in another study. The brilliance of the Pollack discoveries is included. We have found that Grotthuss chain mechanisms may mediate the propagation of photons through brain tissue. In addition, we think that photon and proton of the hydronium ion are coupled. For example, in another study we found marked photon emission differences (very obvious)
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	Living State (2009) . Please also see Figures 4-7 of Davidson, R.M.; Lauritzen, A.; Seneff, S. Biological Water Dynamics and Entropy: A Biophysical Origin of Cancer and Other Diseases. <i>Entropy</i> 2013, 15, 3822-3876. #10 Do the kinetics of the fluorescence (emission) match the kinetics of the protomeric effects seen in this paper? Is there any evidence in your data for a concomitant electromerism? #11 The ANOVA correlations in this study appear to strongly support the conclusions made in this paper, thus providing a further demonstration of thixotropy, and most importantly, that the “holding effect” is modulated by magnetic fields. #12 A “volume” effect may have been suggested in this paper. Might this have implications for interfacial “micro”viscosity, density, and tension? #13 The processes described in this paper appear to have a distinct polarity (and phase) and “handedness”, yes? Interfacial water is phase coherent. Certain nanoassociates of water are chiral, polar, and display “handedness”. Consider helices and double helices of water. #14 How did these investigators arrive at their choice of configuration and geometry (radius and shape) for their “ring of solenoids”? Their choice seems somewhat arbitrary to me. #15 You conclude that the “holding effect” is acting on bicarbonate ions, yet other ions, e.g. sulfate, were present	with pH shifts between 6.8 and 7.4. Yes this is a very interesting paper. The role of water in cell function that is the “water is the solvent of life” metaphor is certainly consistent with what we have found. We did not include this measurement in this paper. In other studies with different field configurations we found clear shifts in energy of the photometric power density that suggest a change of 10^{-20} J per molecule. Indeed, we have considered the emergence of volume-dependent phenomenon such as capillary action. However this is for a different time. We have considered the “structure” of water and whoever you are we agree that some of our observations suggest a structure that has pitch and is a functional cylinder (i.e., helices). The configuration and features are based upon what has worked in the past. This is said more eloquently in
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	in the spring water. Might another combination of magnetic fields effect the solvation layers of the sulfate anion? The heparan sulfate proteoglycans are highly-important, in vivo. Can you “tune” your magnetic fields to generate and observe ion specific effects, e.g. Hofmeister effects? #16 Does the sentence at ca. LINES 79 and 80 analogize to an ion cyclotron resonance (ICR) effect? The sentence seems highly relevant to a non-thermal mechanism for overcoming the “crowding” and “diffusion” problems, in vivo. #17 Can any of your results explain the “shear-thinning” and “micro” viscosity properties of human blood plasma in capillaries? #18 Your work seems to suggest that the magnetic susceptibility and protomerism of the “hydronium ions” of water and its clusters is “driving” everything in vivo, but what about the effect of THz frequencies, visible, and near infrared frequencies on biological water? Which effects or combination of effects are dominant, in vivo? #19 What about the ionization potential of “hydronium ions” and various other protonated water species? Would radical and radical-cation species have a greater magnetic susceptibility than simple “hydronium ion”? #20 You describe a magnetic effect upon the second hydration layer, but I’m not sure whether you are referring to the cations or the anions in the spring water? Or perhaps you were referring to the second hydration layer of BOTH the anions and the cations?	the revision. Interesting, you must be an accomplished researcher. I have been studying colloids and chondroitin sulphates and hyaluronic acid variations (primarily as structure-makers) for decades (initially stimulated by the Piccardi effect). Their responses to magnetic fields have been inconsistent; however I have not given up. Yes it is resonance like This requires experimental testing I understand this reference. The answer is, at least from what we have found, is they respond to different temporal patterns We were referring in general principle to the proton features described by
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	#21 Are these authors prepared at this time to postulate changes in the H-bonded networks of water induced by their magnetic fields, in specific molecular or supramolecular structural detail? #22 Might the magnetic effects on water described in this paper demonstrate a deuterium isotope effect in heavy water?	DeCoursey I would be happy to discuss this at a conference but it is a bit premature for consideration at this time. Whoever this is, I wish we could share some blackboard time Now I realize whoever this is has grasped the big picture. The modulation by a neutron, for obvious reasons, introduces the probability of ionizing effects
<u>Optional/General</u> comments	This paper should be published. The work is highly original and represents an important contribution to our physical understanding of biological water, albeit in an in vitro study. Many of my comments above are simply for consideration only, i.e. they do not necessarily call for a specific revision.	