

Date: Mon, 04 Jan 2010 10:08:53 -0500
To: Kerry Rowe <rowek@queensu.ca>
From: Mort Shirkhanzadeh <shirkhan@queensu.ca>
Subject: Allegation of Data Fabrication and Deceptive Data Selection
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Dera Dr. Rowe,

Re: Allegation of Data Fabrication and Deceptive Data Selection

Solute Diffusion in Nonionic Liquids Effects of Gravity,
Reginald W. Smith, Paul J. Scott, and Barbara Szpunar
Ann. N.Y. Acad. Sci. 1161: 526–536 (2009) (**Research supported by NSERC**)

There are a significant number of ethical problems with the experimental data presented in this recently published paper by Smith et al (a copy of the paper is attached). These problems undermine the validity of the conclusions presented in the paper. The conclusion of the paper is based on a set of experimental data that are fabricated. The research appears to be funded by NSERC.

Temperature values shown in Fig. 1 for the lead - gold samples processed in the MIR space station under isolated mode are not real measured values

Temperature values given in Figure 1 for samples processed under isolation mode in the MIR space station are fabricated. Real measured temperatures were required for accurately calculating diffusion coefficients, but according to Smith (FINAL REPORT) (attached), these temperatures could not be measured due to the problems associated with the thermocouples and mechanical failure during the space experiments.

According to the Final Report by Smith, the astronaut that performed the experiments on MIR noted that a large number of samples were not fully inserted into the furnace while they were being heated (see page 92). According to the Final Report, only 11 of the 37 samples were fully inserted into the furnace and so could be processed as desired. According to the Final Report, lead - gold samples processed on MIR in isolated mode (samples no. 1, 2, 3, 4, and 5 in Table VI-3, page 88) were among those samples that were only partially inserted into the furnace. The results obtained from sample # 2, 3, 4, and 5 are used in Figure 1 in the published paper (Ann. N.Y. Acad. Sci. 1161: 526–536 (2009)). According to the Final Report, these samples did not experience the desired processing temperatures. According to the Final Report (page 92), it was hoped that the oxide film on the tubes would provide specific information about the furnace temperature, the treatment time, and the degree of container insertion into the furnace. How was it possible to scientifically find these three parameters from the color of an oxide film?

The subjective procedure that was used to deduce the processing time and temperatures is not disclosed in the published paper (Ann. N.Y. Acad. Sci. 1161: 526–536 (2009)). An accurate account of the research performed is not presented. The scientific community has been led to believe that temperatures given in the published paper are real temperatures of samples and were scientifically

measured in the MIR space station. But, according to Smith, these temperatures are only “probable processing temperatures” (see Table VI-3, page 88) that were deduced by subjectively inspecting the samples tubes after the samples were returned to earth. What are the real processing temperatures that readers need to have in order to calculate the real diffusion coefficients (D) and to find the true relationship between D and T?

In the Final Report , Smith states that the experimental results from lead-gold diffusion couples (sample # 1, 2,3, and 4) should be of “particular concern” (see the conclusions drawn on page 101). But this serious concern is not disclosed in the published paper ((Ann. N.Y. Acad. Sci. 1161: 526–536 (2009)). In fact, this concern is not disclosed in any papers or thesis (supervised by Dr.Smith) that are available to the scientific community.

Despite the fact that temperatures and diffusion coefficients could not be scientifically determined and despite the fact that the author himself has expressed concerns about the validity of his own experimental results in the Final Report, the data presented in Fig.1 of the published paper show a remarkably perfect linear relationship for these samples! The conclusion of the paper that the theoretical models are in close agreement with the space results is erroneous. The theoretical models presented are only in close agreement with a set of experimental data that are fabricated.

Selective reporting of data in Figs 1 and 2

Conflicting data have been eliminated from figures 1 and 2 in order to claim a linear relationship between D and T. As I have discussed in Acta Astronautica 64, 256-263 (2009), when one includes the omitted data in the analysis, a non-linear relationship emerges that undermine the conclusions.

The supporting document needed to investigate this allegation is Acta Astronautica 64, 256-263 (2009) (attached) and all relevant references given in that paper, including the Final Report on the Queen's University Experiments in Liquid Diffusion (QUELD) that was submitted to the Canadian Space Agency (CSA) (attached) and the Master thesis by Josee Robert that was sent to you before. The problem of selective reporting of data is in addition to the problem discussed in the previous section and brings into question the overall integrity of the results and conclusions the published paper.

Copyrights issue: The results shown in Fig.8 of the published paper (Ann. N.Y. Acad. Sci. 1161: 526–536 (2009)) are not Smith’s results. These results come from “Hildebrand, J.L. , Viscosity and Diffusivity (1977), John Wiley & Sons. New York”. One would think that permission for republication of these results should be obtained from the real author (Hildebrand) and the publisher (John Wiley & Sons, New York), and not from Smith et al (1)! Furthermore, reference 1 (Smith et al) has been officially retracted from the Annals of New York Academy of Sciences. The results shown in Fig. 10 also are not Smith’s results. One would expect that permission should be obtained from the real author(s) to republish these results.

I expect a thorough investigation of these allegations. Please let me know if you need any other supporting documents.

Sincerely,

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