

April 25, 2005

Dr. Kerry Rowe, Vice-Principal (Research)
Richardson Hall,
Queen's University

Dear Dr. Rowe,

**Re: Allegation of Misconduct in Academic Research-
Papers Published by R.W. Smith et al. in the Annals of the New York Academy of Sciences**

I am writing this letter in accordance with Article 17 of the Collective Agreement. I am referring to the following papers by R.W. Smith et al.:

1. R.W. Smith et al., Ann. N.Y. Acad. Sci. 1027: 110 -128 (2004)
2. R.W. Smith et al., Ann. N.Y. Acad. Sci. 974: 57-67 (2002)

Copies of the papers are enclosed.

R.W. Smith et al., Ann. N.Y. Acad. Sci. 1027: 110 -128 (2004)

This paper describes research that has been funded by the Canadian Space Agency. It contains materials or data that have been either plagiarized or fabricated. The paper has been accepted for publication through a conference and it appears that it has been edited by the co-editor of the conference who is the corresponding author in the paper. This paper contains significant materials plagiarized from the work of Jean-Pierre Praizey (Int. J. Heat and Mass Transfer, Vol. 32, No.12, P. 2385-2401, 1988). A substantial part of this paper including results presented in the Tables I- III are shared with another paper published in the Journal of Applied Physics (JAP, Vol.96 (2004) 6213-6219). As discussed previously (letters of Feb. 22 and March 22, 2005), the overall integrity of the paper published in JAP is questionable. In the paper published in JAP, results in the form of curves are given in the appendix that are fabricated. These results are equally relevant to the Annals paper. Furthermore, temperature values are given in Table I in both papers that appear to have been intentionally shifted. The original temperatures can be found in another paper (R.W. Smith, "queen's university experiments in liquid diffusion", pp. 212-21, international symposium on experimental methods for micro-gravity- San Antonio- Texas (1998)).

R.W. Smith et al., Ann. N.Y. Acad. Sci. 974: 57-67 (2002)

This paper also describes research that has been funded by the Canadian Space Agency. It contains materials/ data points/ results that have been self -plagiarized or falsified. This paper has been accepted for publication through a conference and it appears that it has been edited by the co-editor of the conference who is the corresponding author in the paper. The most serious problem in this paper is data falsification. This allegation speaks directly to the question of scientific misconduct. Here, one of the important conclusions of the paper is that *in the absence of significant g-jitter, D varies linearly with temperature ("QUELD- II, isolated" condition, conclusion #4)*. The authors have tried to demonstrate this linear

relationship in Fig. 3 for the Silver-Lead system. The linearity that has been demonstrated in Fig. 3 is truly remarkable. The data set agrees better with a simple analytical expression than would be expected from the measurement accuracy (see the scatter of D values normally observed for this type of measurements (page 103, Ph.D. Thesis, Zhu, Xiaohu, Queen's University Archives (1996)). It has come to light now that the authors have intentionally eliminated some of the earlier experimental data from Fig.3 in order to get a linear relationship. Some of the data points that have been eliminated can be found in an earlier publication (R.W. Smith, "queen's university experiments in liquid diffusion ", pp. 212-21, international symposium on experimental methods for microgravity- San Antonio- Texas (1998) (see Fig.3, D at 400 and 600 °C)). The authors have selectively eliminated these data points because when included, the linear relationship cannot be claimed any longer. In a paper, which appears on the web-site of the Canadian Space Agency, the authors claim that they have processed " a total of 200 samples of various types. Of these, 121 were long capillary diffusion samples". It appears that the authors had more than 5 data points that they could use in Fig. 3, but selectively used only those that matched the linear relationship. In this case, the selection process is so prejudiced as to constitute data falsification. Similar data falsification is also noted in Figure 2 (see the data points for "QUELD-II, isolated"). Some of the data points appear to have been eliminated in order to get a straight line- and temperature values have been changed.

Another conclusion that the authors wish to draw in this paper is that "the reduction of g-jitter afforded by MIM, reduces the measured value of D significantly" (conclusion # 3 in the paper). Again, in Figure 3, the authors have intentionally eliminated the data points obtained under 0-gravity ("QUELD- I" data points) for the Silver- Lead system. When these data points are included in Fig. 3, one can easily see that in fact the reduction of g-jitter would increase the measured value of D significantly! The eliminated data points are shown in a previous publication (R.W. Smith, "queen's university experiments in liquid diffusion ", pp. 212-21, international symposium on experimental methods for micro-gravity- San Antonio- Texas (1998) (see Fig.3, QUELD-I data points)).

The preponderance of the evidence given here suggests that the author (s) committed scientific misconduct, specifically data falsification, in this case.

• Sincerely,

M.Shirkhanzadeh
Associate Professor
Department of Mechanical Engineering

Enc.