

**R.W Smith (Queen's University), "The influence of g-jitter on liquid.....",
Microgravity Sci. Technol. XI/2, 78-84 (1998)**

This paper contains fabricated and falsified data. The paper discusses the importance of using the Microgravity Isolation Mount (MIM) developed by the Canadian Space Agency. The author argues that in order to precisely measure diffusion coefficients in liquid metals, MIM should be used to isolate the experimental facilities from the disturbing effects of g-jitter. The author claims that diffusion coefficients for gold-lead measured under isolation conditions in MIR show a linear relationship with temperature. But temperatures reported are all fabricated.

The author further claims that that the diffusion coefficients measured earlier in the Space Shuttle show a non-linear relation with temperature ($D \sim T^2$). But the results are falsified:

The author has taken the measured diffusion coefficients from page 73 of the Zhu's Ph.D. thesis (Diffusion in Liquid Binary alloys, Ph.D. Thesis, Queen's University, Canada, 1996) but has altered the original measured temperatures reported by Zhu.

Zhu's original data are shown in Table 1 side by side with the results reported in Microgravity Science & Technology. It can be seen that the original temperatures reported by Zhu in 1996 have been changed in such a way to obtain a $D \sim T^2$ relationship.

Table 1
Diffusion coefficients and corresponding temperatures reported for Pb-1% Au.

Zhu's Thesis		[Altered data reported by the author*]		Temperature shift (deg. C)
D X10⁻⁵ (cm²/s)	T (°C)	D X10⁻⁵ (cm²/s)	T (°C)	
2.27	363	2.27	354	9
3.03	437	3.03	428	9
3.40	450	3.40	441	9
4.23	538	4.23	530	8
4.40	550	4.40	542	8
5.80	700	5.80	684	16
7.95	850	7.95	835	15

* Altered temperatures are reported in the Final Report (PWGS FILE No. 9F007-4-6028/01-ST "DIFFUSION in LIQUID"-QUELD Project 4-0028) that was submitted to the Canadian Space Agency (CSA) in 2000.

The same altered data are also used in the Microgravity Science and Technology, and in more than 15 other publications in order to justify the use of MIM.