Review 2

Review of

NUCLEATE BOILING - THE RELATIONSHIP BETWEEN HEAT FLUX AND THERMAL DRIVING FORCE

by

E. F. Adiutori

This is possibly the most stimulating and exciting article I have ever been asked to review. It will be highly controversial and people with axes to grind will try to disparage it, but the truth of the author's contentions is unquestionable. It is so easy to overlook what the mechanism of plotting points on log-log paper really means that I feel the article should be printed in the Journal as a strong reminder to researchers. I can well remember, now that the author suggests it, that most of the data from our laboratory have generated straight lines on linear coordinates and yet my thinking is so accustomed to presenting the curves on log-log paper with slopes close to three that I have been lulled into doing so.

The author has done a great service in pointing out the logical errors often brought about by the use of log-log coordinates.

I think the paper is just about the right length. I feel that it would be helpful if one additional curve were shown, i.e., one which shows the same data plotted on log-log paper but with the additive constant subtracted out. The author's argument on this score is a very strong one and it would help to reinforce it with a graph.

It should not yet be firmly concluded that the heat flux is linearly dependent upon $\Delta T$. The data shown certainly indicate that this is so, but since scatter is always present, the true functionality may not be fully revealed. Perhaps the author should use a few more words like "probably" and "apparently" - I have found it has saved me embarrassment at times.

I notice that at the bottom of page 6 the word "figures" appears with the first letter in caps in some places and in lower case in others.

On page 10 it is observed that "... there is only one regime of nucleate boiling ...". Perhaps it should be mentioned that this contention applies only to the heat transfer behavior. Certainly more than a single regime exists as far as the hydrodynamic patterns are concerned and these are also important in some areas (e.g., in ascertaining density fluctuations in the vicinity of the heater).

I strongly recommend this paper for publication, and the author is to be commended for his fresh approach to boiling heat transfer - a field where the game of "follow-the-leader" is all too often played.

As a matter of policy, I would prefer that my comments should be anonymous.