

ances of film boiling, including the Taylor unstable wavelength, is established at high voltage.

5 A clear understanding of transitional and film electrolysis and an identification of v_{\min} in electrolysis must await experimentation in a system with an extremely high voltage capability and a substantial cell cooling system.

6 The existing body of understanding of boiling processes provides a very useful point of departure for seeking to extend our understanding of gas-forming electrolysis.

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DISCUSSION

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This paper is a thoughtful statement of the similarities and differences between boiling and gas evolution by electrolysis. A most striking similarity is evident between the pictures in Fig. 6 and the frontispiece in *Heat, Mass, and Momentum Transfer* by Rohsenow & Choi. Similar actual superficial vapor velocities away from the surface apparently yield similar interface geometries.

There are some very important differences between boiling and electrolysis. One not stressed in the paper is the fact that a vapor bubble has a constant temperature interfacial boundary condition while a gas bubble has a variable temperature boundary condition. Therefore, the amount of heat transfer for bubbles of equal size will be very different for the two types. Gas bubbles can excite thermal capillary flow while vapor bubbles cannot. Gas bubbles grow so slowly that dynamic effects on growth and departure are unimportant. This is not true of vapor bubbles.

These differences are in addition to the very important nucleation effects stressed in the paper.

Authors' Closure

We are grateful to Professor Griffith for his interest in this work and for laying down two *caveats* for workers who might seek to pursue other aspects of the boiling-electrolysis analogy. While we have not tried to predict details of the isolated bubble regime where these warnings apply, there is a strong interest in the behavior of single electrolysis bubbles on the part of many workers today.

Possibly, there is some misunderstanding on one point, however: The question of heat transfer during electrolysis is not a concern in this study. We have drawn the analogy between heat flux in boiling and current flux in electrolysis.

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