

REJOINDER

WE APPRECIATE the interest expressed by Harpole and Edwards on our recent paper, "Heat-transfer measurements of evaporating liquid droplets".

It is true that we did not take into account internal reflection of radiation from the walls and thus perhaps underestimate the actual radiative heat transfer. There are two reasons for this. Firstly, from literature the emissivity of bricks at high temperature varies from 0.3 to 0.75 depending on the type of bricks. The emissivity is also a function of temperature. Although we know the temperature, we could not obtain the emissivity data from the manufacturer and we did not measure it. Secondly, we did not measure the surface temperature of the Vycor glass windows but assume that they were the same as the brick. This may or may not be true. For the above reasons we decided to take into account radiation approximately by assuming a constant emissivity of 0.7 and neglecting internal reflection. To do otherwise would involve numerical solution of the radiative equation and the result may not be more accurate.

Harpole and Edwards are correct in that we did not take radiation into account in the evaluation of B number. We should have done so. However, we believe that in their equation (5), the Q_r should be replaced by Q (total heat transfer to the sphere).

Finally, we would like to point out that radiation is significant in the present experimental set-up only for free stream temperature above 800°C. This involves only some of the water data which is about 10% of the total data we have taken. To study the effect of radiation we should measure it directly. This is what we plan to do.

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