Denpo *et al.* [3] actually measured the cupric ion concentration and hydrogen ion concentration distributions near vertical walls using two-wavelength holographic interferometry. The boundary layer thicknesses of the cupric ion and hydrogen ion did not show any appreciable difference. (Both were approximately 0.5 mm.)

(3) Previous studies [4, 5] indicate that the Rayleigh number is simply additive, if one buoyancy is significantly larger than the other and/or if the ratio of diffusivities is close to unity. According to Nilson and Baer [6], the counter-flow at buoyancy ratio of 0.1 and diffusivity ratio 3 falls well within the inner-dominated flow region. The fluid flow can be assumed to be in the simply-additive region [7] and a single solutal Rayleigh number can be used.

(4) The concentration increase of H_2SO_4 at the cathode is approximately 35–45% of the bulk concentration of $CuSO_4$ [8, 9]. In the present experiment, the concentration of $CuSO_4$ is in the range of 0.015–0.05 mol l^{-1}, and it creates a concentration increase of H_2SO_4 by 0.005–0.02 mol l^{-1}, which is considerably smaller than the nominal concentration of H_2SO_4 in the bulk fluid (1.5 mol l^{-1}). The concentration variation of hydrogen ion in the cavity due to the migration effect would be between 1.48 and 1.52 mol l^{-1} at worst.

(5) The triply-diffusive analysis could be suggested for future studies for further refinements in the experimental technique.

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Comments on "Coupled heat and mass transfer by natural convection from vertical surfaces in porous media"

I AM VERY pleased that this new full-length paper [1] confirms our scale-analysis predictions and extends the range covered by our similarity solutions [2]. However, there is one erroneous claim in this new paper, and I must correct it.

On page 1192, the authors state that "Contrary to what has been reported by Bejan and Khair (ref. [2] below), we have found ... that solutions in the range of $N < -1$ are impossible." In other words, the solutions reported by us [2] for the negative buoyancy ratios $-5 \leqslant N \leqslant -1$ are fictitious. They explain this claim in the footnote: "Although Bejan and Khair did not state clearly in their paper, the solutions they presented for the range $-5 \leqslant N \leqslant -1$ actually corresponded to a different problem, for which the convective flow is always downward, such that the parallel double boundary-layer structure is maintained."

Lai and Kulacki are wrong. I draw attention to page 913 in our paper [2] in which we pointed out that: "The only change that occurs when N is negative and large in absolute value is that the double boundary layers sketched in (our) Figs. 1 and 2 develop in the negative y direction, since the flow will then be downward." Obviously, our solutions for $-5 \leqslant N \leqslant -1$ are correct, and we explained their physical meaning quite clearly.

Recognition of the possibility of two flow directions, or the condensation of two problems into a unified treatment (for brevity, among other virtues) was one of the central ideas of our paper. We emphasized this by using $|N|$ instead of N, wherever appropriate. In our drawing of the double boundary layer structure (Fig. 2) we did not indicate 'up' or 'down': note that y, the y arrow and the gravity vector are missing.

As an aside, I note that Lai and Kulacki did not mention ref. [3], which is where this problem was first formulated and solved by scale analysis.

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