and this validity is independent of the dimensionless axial distance, λ, when velocity is extremely small. We believe that the conclusion made by Smith, et al. is partially due to an imperfection in the numerical algorithm (Poirier and Carr, 1971) which they used.

It is apparent that only the boundary condition at $u = 0$ forms the first finite difference equation and only the condition at $u = 1$ forms the last equation in Poirier and Carr's algorithm. The proper way to construct (by finite difference method) a set of simultaneous algebraic equations, is to incorporate boundary conditions, with respect to corresponding coordinates, into the governing equation (Lapidus, 1962) because the governing equation must be valid everywhere in the system considered.

Their neglect of homogeneous reaction on the boundaries in the radial direction underestimates the rate of species disappearance by homogeneous reaction. One therefore exaggerates the importance of α on deviation from the plug flow assumption. The wall reaction is confined to the wall and depends on radial dispersion for supply of reagents, while bulk reaction occurs everywhere in the reactor (including on the wall) and can sustain itself by depleting local molecules. Parabolic velocity profile retards wall reaction by creating a high concentration zone away from the wall, but it has less effect on bulk reaction because each stream line can be taken as a plug flow reactor.

The validity of the plug flow model also depends on λ, except under conditions such that radial dispersion competes with bulk velocity or with wall reaction, resulting in a radial concentration profile that is nearly uniform. The basic argument for inclusion is that conversion of the uniform radial concentration profile at the reactor entrance to a parabolic profile downstream must occur gradually, and the validity depends on how far the real profile is from its corresponding uniform profile.

We, therefore, conclude that the validity of the plug flow assumption depends on α, H, and λ and that H is a stronger factor than α upon its validity.

Literature cited

Lapidus, L., *Digital Computation for Chemical Engineers*, McGraw-Hill, New York, Ch. 4 (1962).

Poirier, R. W., and R. J. Carr, "The Use of Tubular Flow Reactor for Kinetic Studies over Extended Pressure Ranges," *J. Phys. Chem.*, **75** (10), 1593 (1971).

Walker, R. E., "Chemical Reaction and Diffusion in a Catalytic Reactor," *Phys. Fluid*, **4** (10), 1211 (1961).

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To the Editor:

We would like to call attention to the *AICHE J.* that the article by S. V. Alekseenko et al. entitled "Wave Formation on a Vertical Falling Liquid Film," **31**(9), 1446 (1985) is in large part similar in title and manuscript content with an article published by the same authors in *Int. J. Multiphase Flow*, **11**(5), 607 (1985).

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Editor's Note:

Professor Yih is correct. The final versions of nearly identical papers were received by the two journals within one month of each other, even though the authors transferred the copyright of their paper to the *AIChE Journal* when the paper was accepted for publication.

Errata

In the paper "Automatic Synthesis of Optimum Heat Exchanger Network Configurations" by C. A. Floudas, A. R. Ciric and I. E. Grossmann (**32** (2), 276 (1986)), the authors incorrectly reported several results. The corrections are as follows: p. 285, right column, 2nd paragraph, line 6, "377,900" should read "373,900." p. 287, Table 10, the reported areas correspond to 11.1 K approach. The correct areas for 6.38 K are: 81.3 (H1-C1), 43.2 (H2-C1), 26.1 (H3-C1), 190.3 (H6-C1), 18.3 (H1-C1), 25.1 (H3-C1), 320.1 (H4-C1), 25.7 (H1-CW), 89.4 (H5-CW); the cost of the furnace is 2.5505 $Q^{0.7}$.