**Reply:**

Professor Han has three criticisms of our article: our viscosity equation has no rheological significance, our assumption of $\chi = 0$ is unjustified, and we failed to reference his 1991 article.

We agree that our viscosity equation is empirical. Viscosity does not enter into the model except as a measure of mixing of the two diffusing polymers. As stated on page 982 of our article we actually "used the experimental data as a master curve, and a third-order spline interpolation method to find the viscosity of the blends at any concentration."

We disagree that $\chi < 0$ is required for miscibility of two polymers. From Flory–Huggins theory with chains of equal length $N$, the criterion for miscibility is $\chi N = 2$. However, even if $\chi$ for HDPE/LLDPE blends were slightly negative this would not change the conclusion of our article, namely that a single, concentration dependent-diffusion coefficient can model their mutual diffusion.

On the last point we did review the Kim and Han 1991 article in an early stage of this study. We could have included it for completeness on the subject of mutual diffusion in polymers. However, we do not find that the subject of this article is directly related to our study, and nor would its results alter the discussion or conclusions of our article. In Kim and Han, the effect of processing conditions on the interfacial layer thickness between two miscible polymer layers is considered. They solve unsteady state mutual diffusion into a semi-infinite space. In our article, we solve quasi-static, mutual diffusion between two miscible polymers using 32 coextruded layers. Our diffusion problem is an unsteady-state finite boundary problem, i.e. mutual diffusion in the 32 layers bounded by two solid walls. Therefore, we do not think our article simply "reinvents the wheel". With increasing number of research groups using multilayer structures to study mutual diffusion, we believe (along with the reviewers of the *AIChE Journal*) that our methodology is a valuable contribution.

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AIChE Journal, Vol. 53, 3019 (2007)
© 2007 American Institute of Chemical Engineers
DOI 10.1002/aic.11284
Published online September 17, 2007 in Wiley InterScience (www.interscience.wiley.com).