

## Predicting Transport Properties of Dilute Gas Mixtures of Light Hydrocarbons and Perfluorocarbons as Candidates for New Refrigerants

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Hydrocarbons offer acceptable alternative refrigerants to the CFCs, since they have good thermodynamic properties and they are universally available at low price. In addition, the global warming potential is very low for hydrocarbons. The focus of this work has been on generating effective and isotropic pair potential energies of dilute gas mixtures of light hydrocarbons and perfluorocarbon gases using the viscosity data in the form of law of corresponding states in conjunction with a two-iterative inversion method, and then predicting transport properties of these systems through the kinetic theory of gases. The inversion method is that of Gough and his coworkers [1] which has been devised to enable the potential energy to be determined from the experimental data without making any prior assumptions about its form. Transport properties including viscosities and diffusion coefficients were computed from Chapman-Enskog theory [2] and thermal conductivities from Schreiber's scheme [3] that are methods using the inverted pair interaction potentials. In general, the calculated viscosities and diffusion coefficients agree with experiment to within 2 % and 3 % .

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- [4] J. Kestin, H. E. Khalifa, S. T. Ro and W. A. Wakeham, *Physica*, **88A**, (1977) 242.