D_{AB} = binary coefficient of mass diffusion in the mixture of gases A and B
g = gravity acceleration
h = height difference between the interfaces mercury-gas in the viscometer reservoirs
L; L_{Hg} = length of gas capillary and of mercury tube, respectively
n = molecular concentration
N_{Re} = Reynolds number
P; $P_{tot.}$ = experimental and total pressure of the gas, respectively
ΔP = pressure drop corresponding to height difference, h
q; q_{Hg} = volumetric flow rate of the gas and of the mercury, respectively
r; r_{Hg} = radius of gas capillary and of mercury tube, respectively
R = gas law constant
S_0 = area of the interface mercury-gas at zero inclination of the viscometer
S = area of the interface mercury-gas in the viscometer reservoirs during a run
$\bar{t}$; t^* = time required for displacing the mercury and the gas during a run, respectively. $\bar{t} = t^*$ when $P \geqq 50$ atm.
T = absolute temperature
X_i = radial distribution function at distance σ_i from the center of a molecule i having diameter σ_i
V = volume between contacts e_1 and e_2 in reservoir b of the viscometer
$V + V_I$ = gas volume in reservoir b of the viscometer at the beginning of the run
V_{II} = gas volume in reservoir a of the viscometer at the beginning of the run
$\overline{V}$ = molar volume
Z = compressibility factor of the gas, $Z = P\overline{V}/RT$

Greek Letters

ϵ_0 = distance between contacts e_1 and e_2 in reservoir b at zero inclination of the viscometer
η; η_{Hg} = viscosity of the gas and of the mercury, respectively
θ = inclination angle of the viscometer
ρ; ρ_{Hg} = density of the gas and of the mercury, respectively
σ_i = molecular diameter of specie i ($i = A, B, AB$)
Ω_d; Ω_v = generalized collision integrals for mass diffusivity and for viscosity of molecular pair AB, respectively
δ = parameter, defined by Equations (24), (25), related to the volume change of the gas during its displacement through the capillary

Subscripts

$(\ )_1$ = for viscosity and for mass diffusivity at $P = 1$ atm.
i = for component i ($i = A, B, AB$)
1; 2 = for quantities at the beginning and at the end of a run, respectively
eff = for effective displaced volume of gas through the capillary

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Comparison of Lagrangian Time Correlations Obtained from Dispersion Experiments and from Space-Time Correlation Functions

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The relation between Lagrangian and Eulerian statistics for turbulent flow has been approached only through approximations or models of the actual motion. Some of these approaches have been motivated by a purely theoretical interest in the problem (*1* to *5*) and others by need to justify the interpretation of an experimental measurement (*6* to *10*). Altogether, little progress has been made in this endeavor despite its importance in the research on tur-