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**The Effect of Gas Properties on Mesler Bubble Entrainment** R.K. SUNDBERG, J.R. SAYLOR, Clemson University — Mesler entrainment involves the generation of hundreds of micron size bubbles, frequently distributed in a chandelier-like pattern following the impact of a liquid drop with a bulk surface of the same fluid. To date, research on Mesler entrainment has taken place in air at atmospheric pressure and has therefore neglected to test the influence of gas properties. The results of drop impact studies are presented where a controlled environment was employed consisting of air- helium and air-carbon dioxide mixtures. The dynamic viscosity of pure air at STP is $1.85 \times 10^{-5}$ Pa.s and the kinematic viscosity is $1.6 \times 10^{-5}$ $m^2/s$. By using air-helium and air-carbon dioxide mixtures, kinematic viscosities ranging from 0.5 to 7 times that of air were attained, with dynamic viscosities ranging 0.8 to 1.0 times that of air. The frequency of occurrence of Mesler entrainment is noted for methanol in these environments and is compared with results gathered in air. The effect of the gas phase viscosities and the Capillary number are discussed.

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