

ABSTRACT  
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Lecture demonstrations of molecular models of sound. (Ronald A. Wobl, David M. Green and R. Victor Jones, Harvard University, Cambridge, MA 02138)

Small polyfoam spheres levitated on an upward stream of air provide an effective means for visualizing and studying microscopic models of fluids. Agitated by the air stream and randomized by collisions, the motion of the spheres may be likened to the chaotic motion of the molecules of a gas. "Polyfoam gas" is a striking illustration of many aspects of kinetic theory, but it is particularly useful in the study of sound. One may easily observe the coherent density variations of an acoustic excitation propagating through the randomly moving spheres. Inexpensive apparatus has been developed which makes use of simple household fans and air stream "straighteners". In this talk we will describe the construction of the apparatus, discuss the properties of polyfoam gas and present video tapes of lecture demonstrations - eg. sound pulse propagation, standing waves, diffraction, etc.. [These demonstrations were developed as part of a new undergraduate Core Curriculum course in psychophysics].