

ABSTRACT

In this report an ultrasonic method for determining the size of particles in suspensions was evaluated. The method employed the transmission of an ultrasonic beam through the suspensions and the correlation of the measured beam attenuation at various frequencies to the diameter of the particles in suspension.

The attenuation equation of Cushman et al, which was the basis of the mathematical model, was first tested to verify that this equation represented the actual attenuation process taking place in the test suspensions. The derived relationship which uniquely determines the particle diameter in terms of the measured attenuation and the frequency of ultrasound was then tested. The results of this test showed that the method can be used to determine the particle diameter.

In addition to determining the size of the particles in suspensions, the effect of low pressure on the attenuation of ultrasound in pure liquids was investigated. This investigation showed that attenuation increased with increasing vacuum. Finally the effect of low pressure on the attenuation in suspensions was considered. The results showed variation in attenuation with vacuum but a definite pattern was not discerned.