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**Velocity Fluctuations in Binary Particle Liquid Fluidized Beds**

PHIL SEGRE, JAMES DAVIDHEISER, ELIZABETH BAKER, Physics Dep., Emory Univ, Atlanta Ga. — We study particle velocities and concentration profiles of mixtures of 2 different sized particles in concentrated liquid fluidized beds. For binary systems of particles of the same density, we find that there is always a complete phase separation in the bed. The larger particles occupy a zone in the lower part of the bed, and the smaller ones a zone in the upper part. For binary systems of particles of *different* density materials, conditions are found where the binary particles are either fully separated, partially mixed together, and at a single point called the inversion point, fully mixed into a one phase state. Results will be presented on the phase diagrams of binary suspensions as well as the properties of the velocity fluctuation magnitudes and spatial correlation lengths.

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