

Figure 1. Snapshots at various simulation times. (a) simulation time=0.1 s, (b) simulation time = 0.25 s, (c) simulation time = 0.5 s, (d) simulation time = 0.75 s.

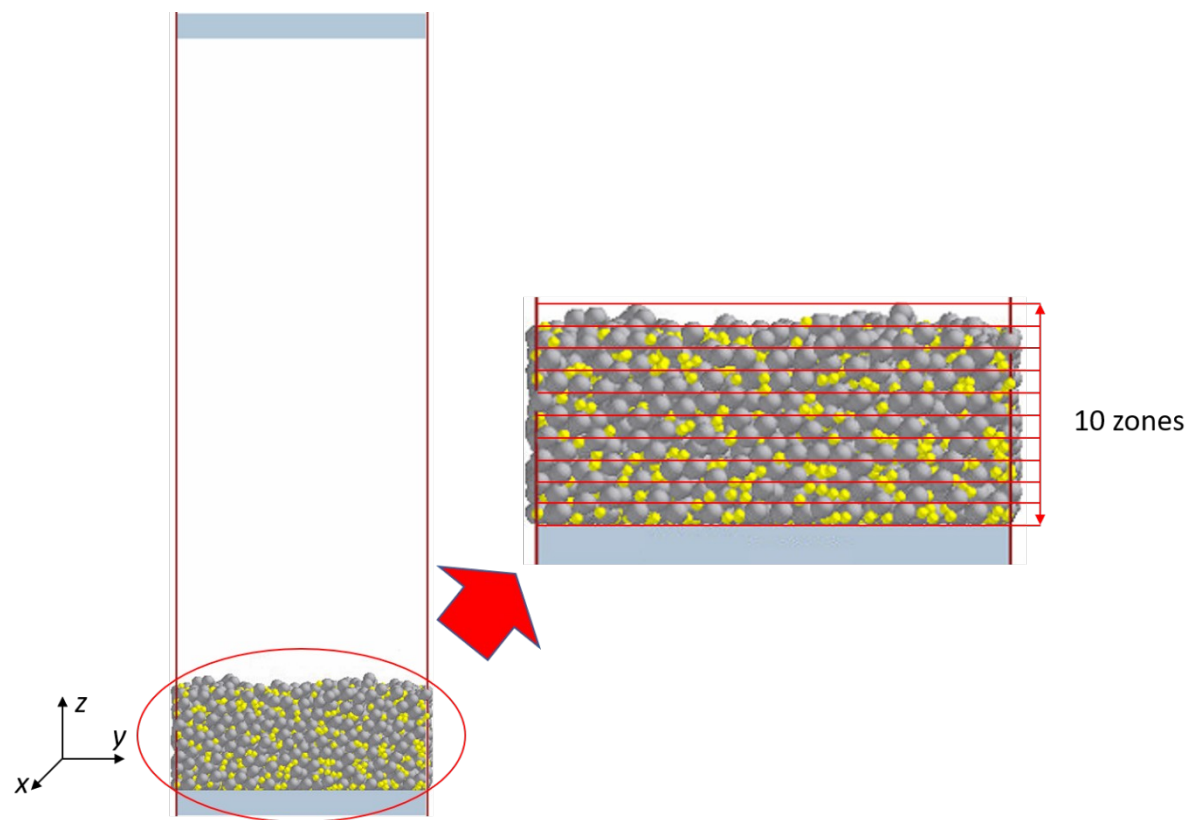


Figure 2. Schematic (side view) of cohesive particles generated in high vibration system.

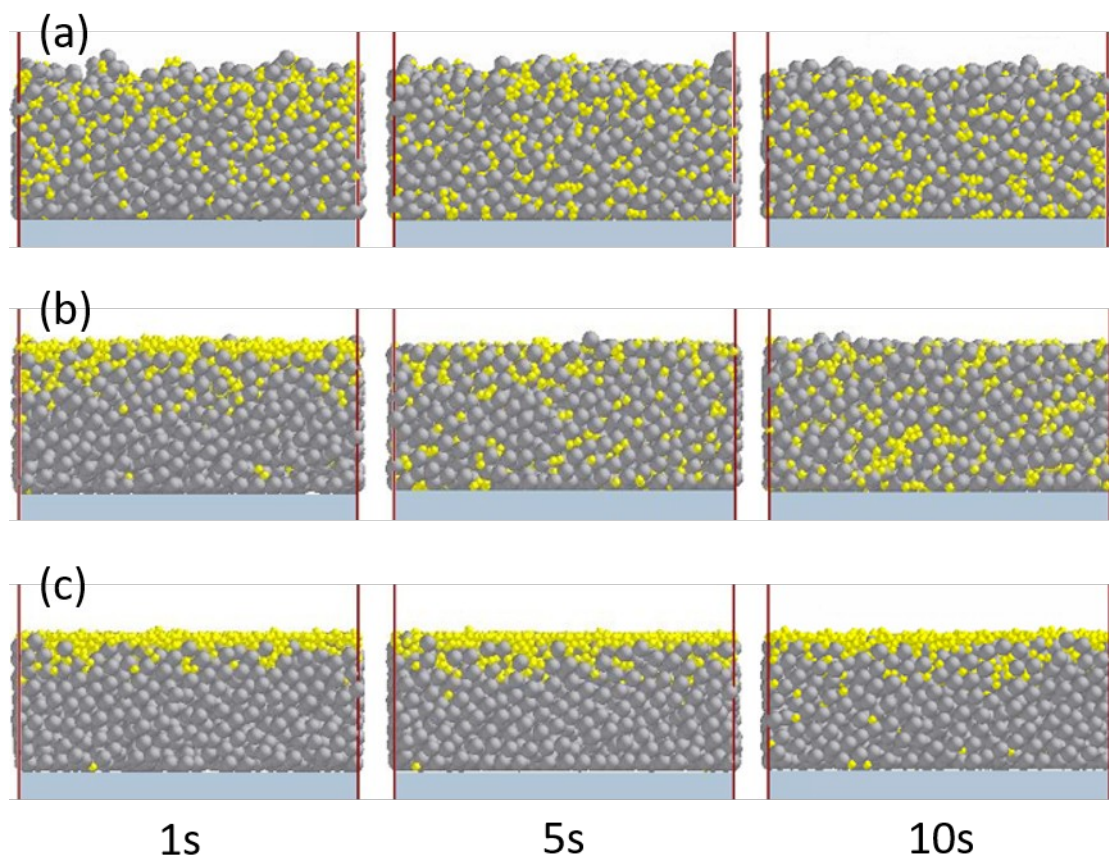


Figure 3. Mixing performances after processing 1s, 5s and 10s under processing amplitude of (a) 10, (b) 7.5 and (c) 5 mm.

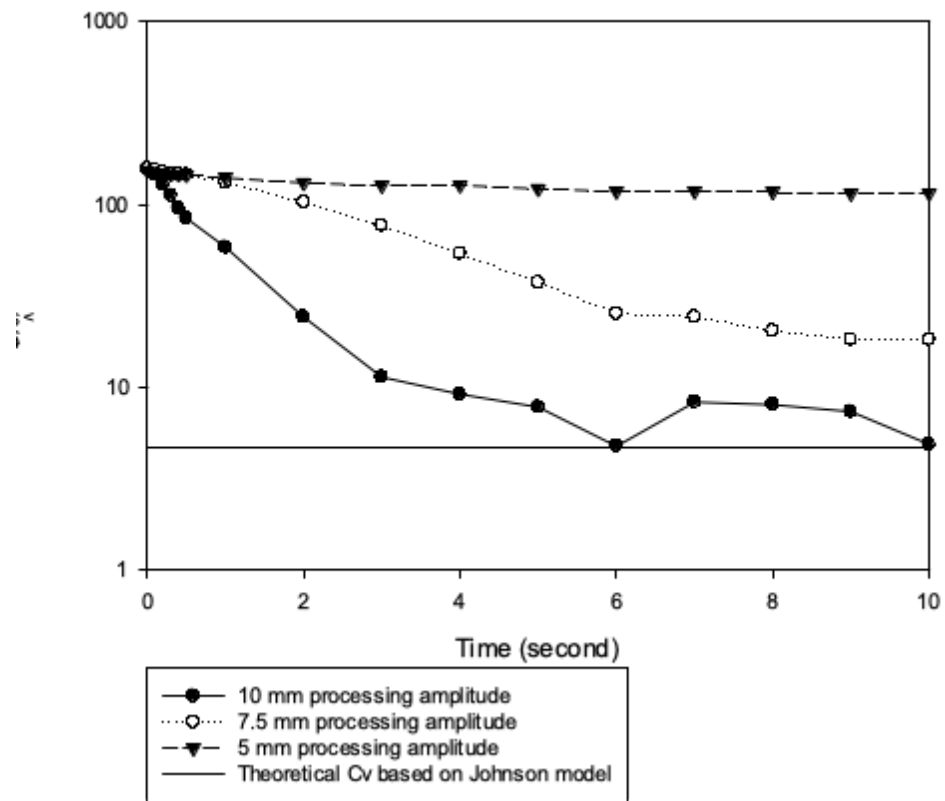


Figure 4. Coefficient of variation (C_v) values of small particles as a function of time at various processing amplitudes.

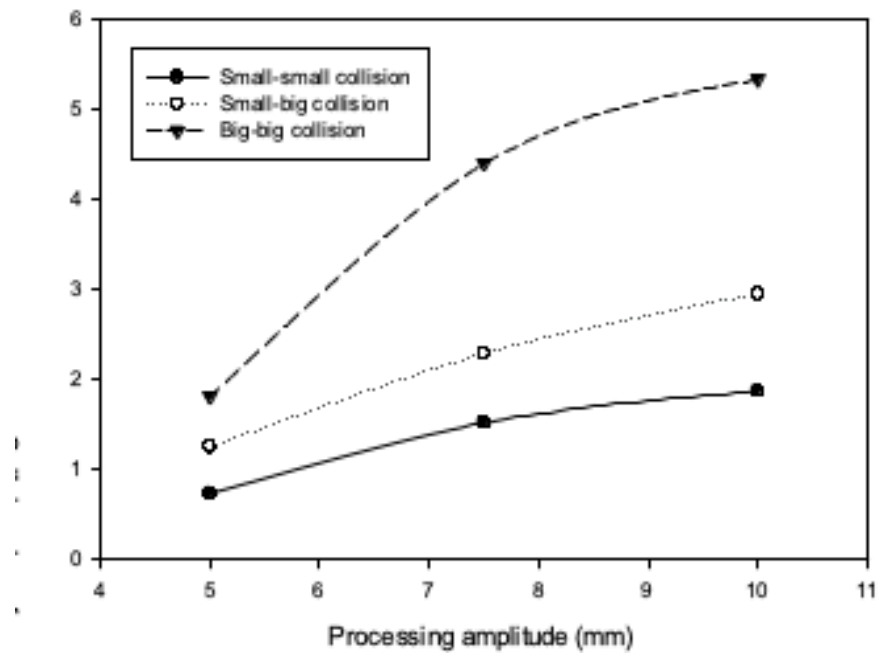


Figure 5. Average collision shear force between small-small, small-big and big-big particles as a function of processing amplitude.

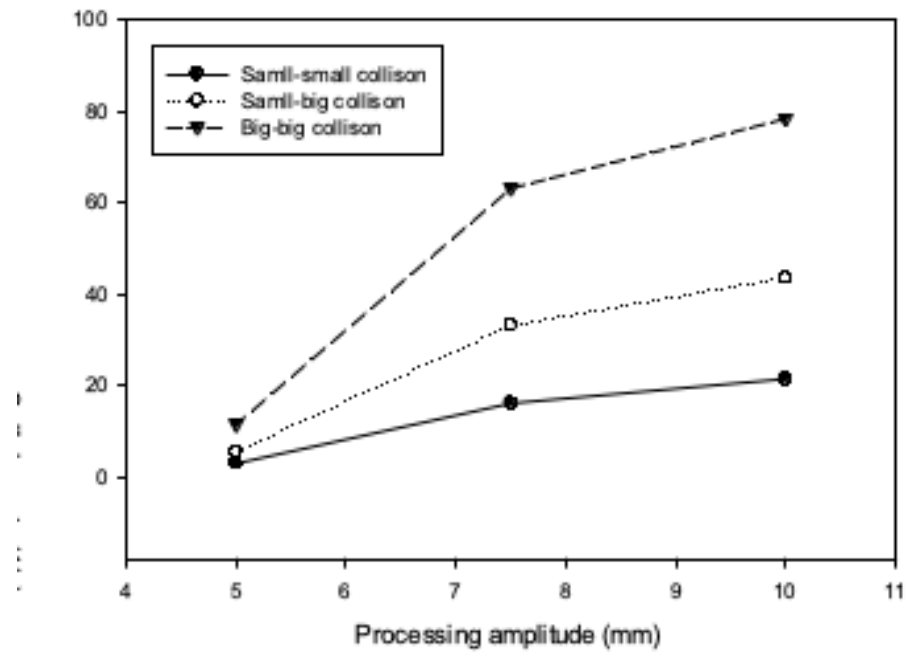


Figure 6. Average collision rate between small-small, small-big and big-big particles as a function of processing amplitude.

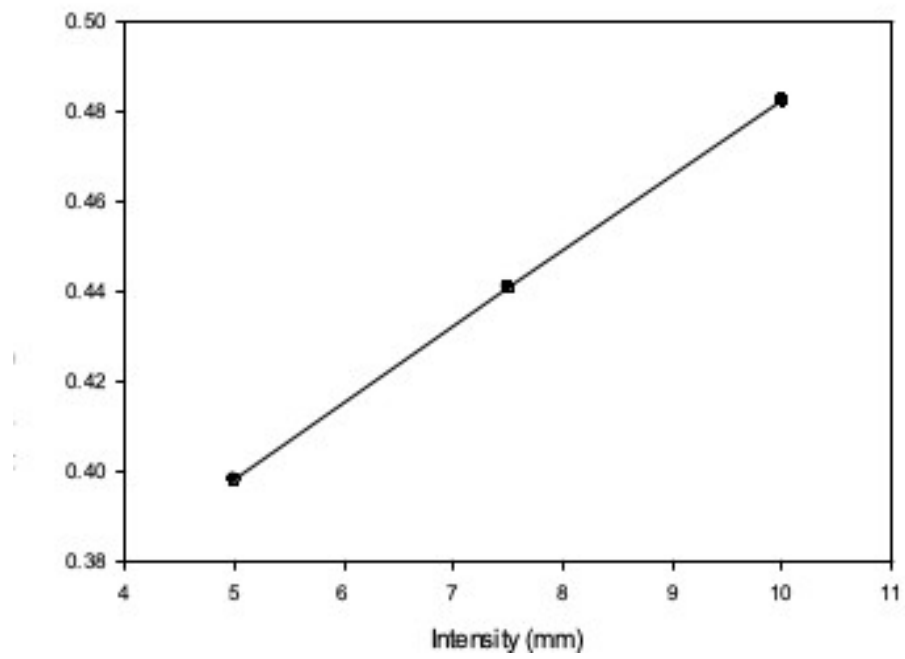


Figure 7. Powder bed porosity as a function of processing amplitude.

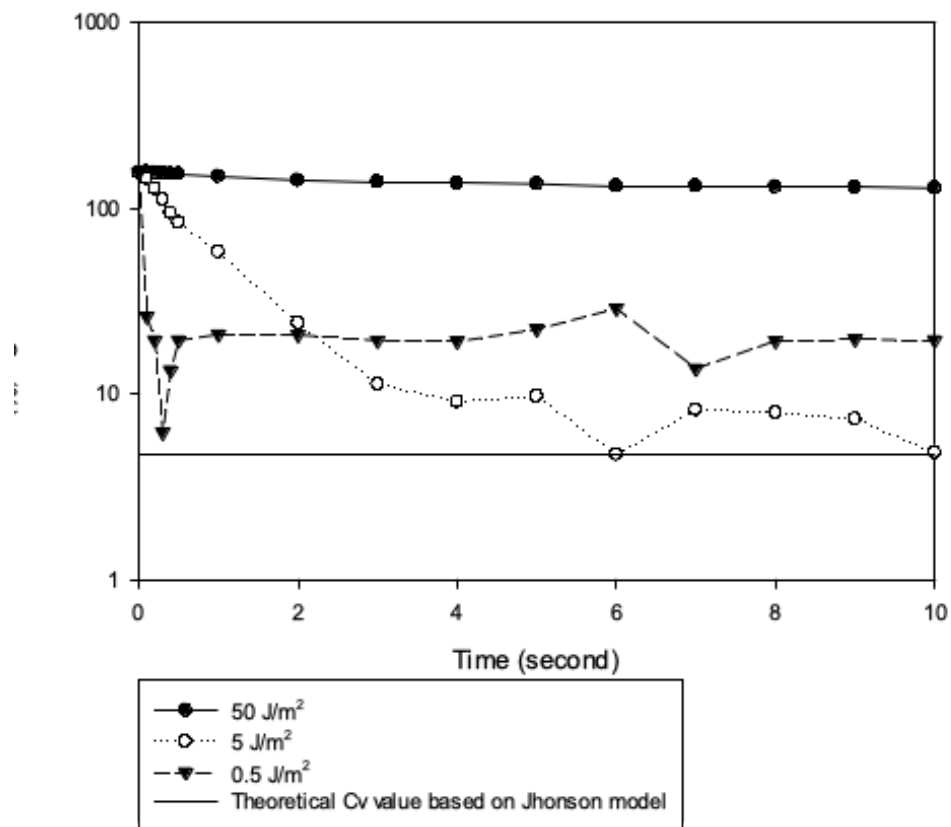


Figure 8. Coefficient of variation (C_v) values of small particles as a function of time. Various surface energy values were used, and processing amplitude was set at the highest level of 10 mm.

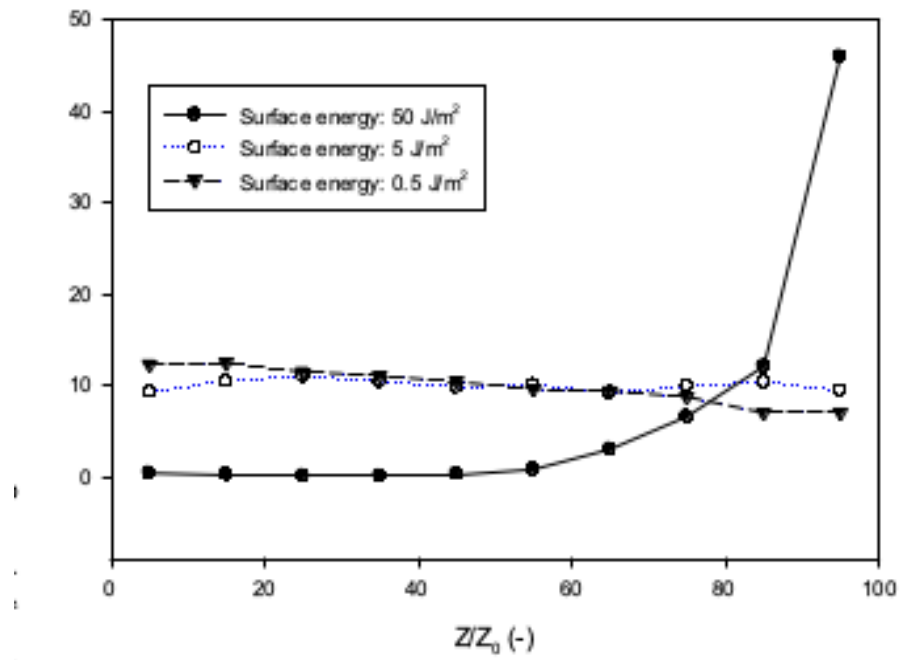


Figure 9. Small particle concentration as a function of vertical axis at 10s under the highest processing amplitude of 10 mm.

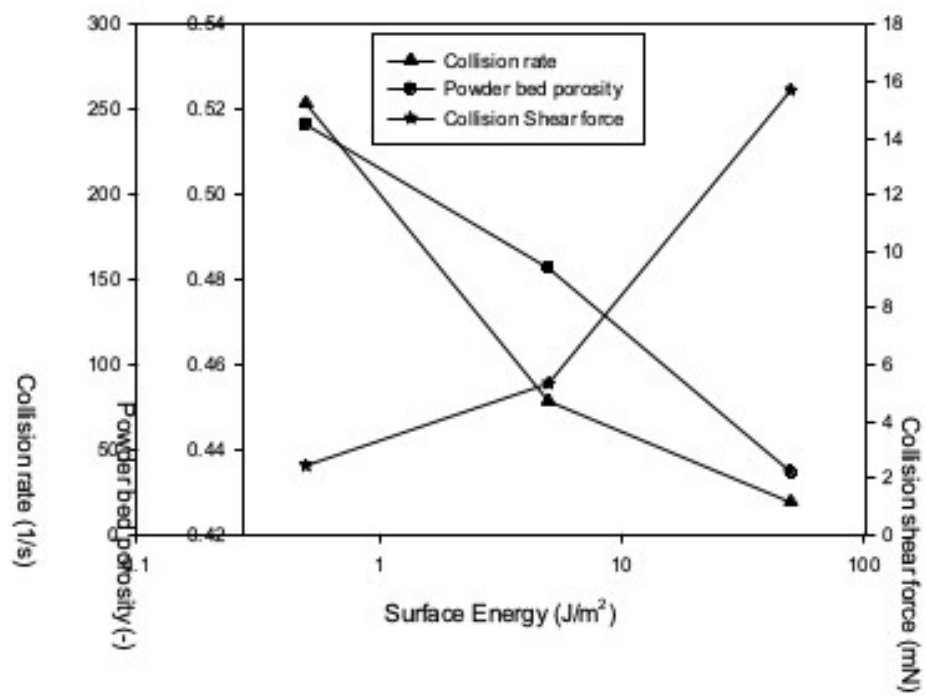


Figure 10. Collision rate, powder bed porosity and collision shear force as a function of surface energy.

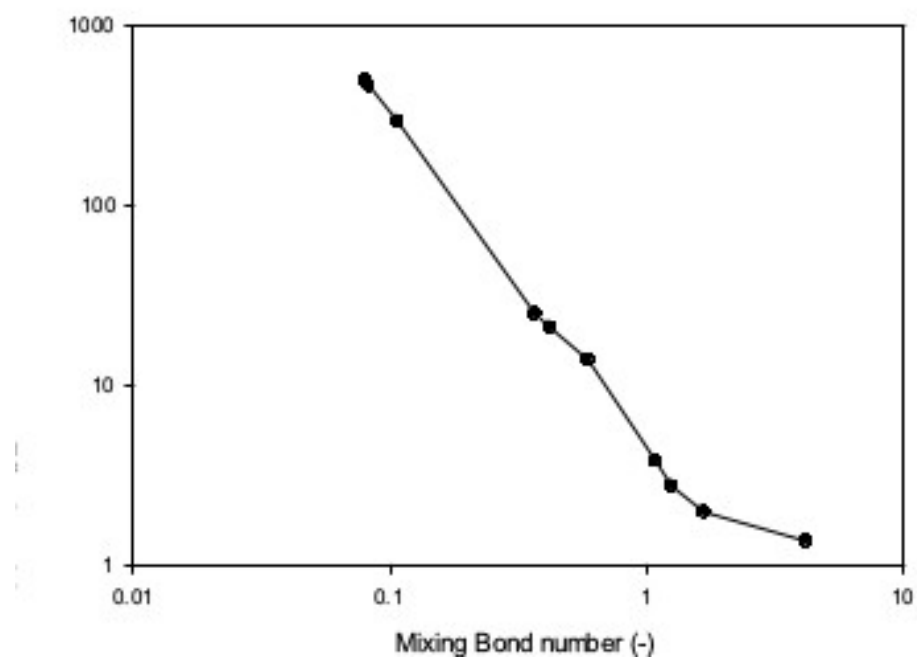


Figure 11. Effective mixing rate as a function of mixing Bond number.

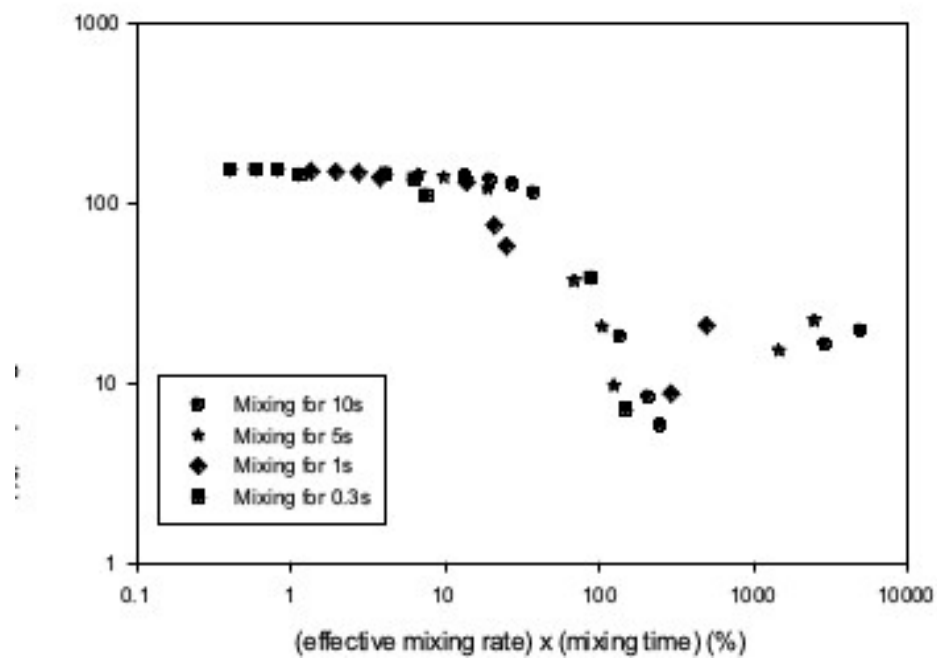


Figure 12. Coefficient of variation (C_v) values of small particles as a function of the product of effective mixing rate and mixing time.