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**Structure and phase behavior of colloidal hard dumbbells under the influence of gravity** MATTHEW WOZNIAK, MANUEL VALERA, Slippery Rock University — Using molecular dynamics simulations, we studythe structure-ofsystems of hard dumbbell particles that are sedimented under the influence of gravity. It is useful to determine these structural measures with agravitational field because of recent experimental interest in systems of colloidal dumbbells, which are massive enough that settling effects must be taken into account. Similar studies[M. Marechal and M. Dijkstra, *Soft Matter*, 2011, 7, p.1397-1408] have used Monte Carlo simulations to provide information about structural and phase characteristics that develop in a gravitational field for systems of dumbbell particles of multiple aspect ratios. However, it has not yet been determined for dumbbell particles how crystal growth and the phase behavior of the systemareeffectedby the strengthening of the gravitational field. In this research, the structure and phase behavior of systems withdifferent gravitational strengths and dumbbell aspect ratios are visualized and quantified.

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