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The effect of substrate roughness on random sequential adsorption packing properties

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Adsorption on smooth and atomistically flat surface is well understood, while still very few works concern adsorption on rough and heterogeneous surfaces. In this study, we investigate the properties of packings of balls obtained via random sequential adsorption (RSA) on a sinusoidal substrate. Our main goal is to observe surface inhomogeneities on a scale smaller than particles' size. We study how various characteristics, such as packing fraction, packing growth kinetics, available surface function and 2-particle density correlation function depend on the wavenumber and the amplitude of a sine-wave-shaped surface. These quantities indeed allow us to discern very minute surface impurities from the packing alone.

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