

Gas aggregation sources belong to the significant physical methods for nanoparticle synthesis. Deposition of these nanoparticles onto the desired substrate is equally important. This work presents a description of the movement of nanoparticles between the orifice (the outlet of the source) and the substrate located in the deposition chamber. It investigates the velocities of nanoparticles depending on their structure and on experimental conditions, while also examining the interaction of nanoparticles with the substrate. It describes and experimentally verifies the reflection of nanoparticles from the substrate for metallic nanoparticles, plasma-polymeric nanoparticles, and core@shell nanoparticles (with a silver core and a plasma-polymeric shell). Finally, it demonstrates the influence of reflection on deposition rate measurements and describes how to account for nanoparticle reflection when estimating the optimal deposition time for preparation of the samples for specific purposes.