A Study on the Tunable Memory Characteristics of Nanoparticle-Based Nonvolatile Memory devices according to the Metal Nanoparticle Species
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Abstract: We investigated the programmable memory characteristics of nanoparticle-based memory devices based on the elementary metal nanoparticles (Co and Au) and their binary mixture synthesized by a micellar route to ordered arrays of metal nanoparticles as charge trapping layers. According to the metal nanoparticle species quite different programming/erasing efficiencies were observed, resulting in the tunable memory characteristics at the same programming/erasing bias conditions. This finding will be a good implication for further device scaling and novel device applications since most processes are based on the conventional semiconductor processes.

Key Words: nonvolatile memory, diblock copolymer micelles, metal nanoparticles, memory characteristics