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Abstract
Characteristics and mechanism of the metal oxide structure produced by atomic force microscopy (AFM) anodization and dip-pen lithography (DPN) are studied. Effects of experimental parameters including the applied voltage, the anodization time and the electric field strength on the oxidation are discussed. Molecular dynamics (MD) simulation was employed to analyze the oxidation mechanism. The results show that the growth of the oxide structures increased as the applied voltage, the anodization time and the electric field strength were increased. The height and width of the nanodots was increased when the distance between the tip and the sample was increased. Furtheremore, the adhesion force and the contact angle of the self-assembled monolayers (SAM) were measured. The dip-pen lithography was developed with SAM.
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