Experimental observation of charging potentials in a deep trench structure using an anodic aluminum oxide template

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The charge accumulation effects were investigated by measuring plasma-induced charging potentials in a high aspect ratio trench structure. An anodic aluminum oxide (AAO) was used to demonstrate this high aspect ratio trench structure on a monitoring device. A top electrode and bottom electrode were formed in the AAO contact structure, and the charging potentials were measured in inductively coupled argon discharge. The potential on the bottom electrode increased as with increasing ion flux measured by a floating probe, and the potential on the top electrode was similar to the floating potential measured by a Langmuir probe. These results were attributed to the flux imbalance of the charged particles due to the high aspect ratio topography of the AAO structure.