512h Nanocell: the Possible Solution for Moore's Law

Yuefei Ma, Liuming Yan, and Jorge M. Seminario

As Moore's law predicted, today's electronic devices are scaling down to several tenths of nanometers that it is difficult to fabricate such small devices. While several research groups are trying to incorporate single molecules to electronic circuits using molecules performing complex functions, addressing these molecules becomes a problem for our present fabrication techniques such as litography. Here, we report results on a type of nanoCell which has been proposed to solve this problem. In a nanoCell, molecules are chemically deposited on a discontinuous metal or semiconductor film used as interconnects between the molecules. Micro size metal patterns are used to interconnect nanoCells. We investigate the effects of different interconnect materials and different molecules on the static and transient current-voltage characteristics of the nanoCell.