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Vertically Aligned Antimony Nanowires as pH Sensors PAI-CHUN CHANG, JIA GRACE LU, University of Southern California, JIAN-SHAN YE, FWU-SHAN SHEU, National University of Singapore, UNIVERSITY OF SOUTHERN CALIFORNIA COLLABORATION, NATIONAL UNIVERSITY OF SINGAPORE COLLABORATION — Antimony (Sb) has remarkable linear response to solution H^+ concentration and has been built into commercial pH electrode. Unlike conventional glass tube-based pH electrode, solid state Sb electrode represents a good candidate for integrated pH sensor with fabrication compatible to silicon-based complementary metal oxide semiconductor (CMOS) process. In addition, due to its high resistance to corrosion, Sb-based pH electrode has been used in a wide range of applications. Because of its versatile sensing applications, Sb probe in size scale compatible to cells is perceived to hold great potential to meet the demand of biomedical research.The *in vivo* and *in vitro* intracellular real time monitoring of pH,Na^+, K^+ – a key subject in cell biology and physiology, may require vertically oriented nanoscale electrodes in close contact with cells. Such nanoelectrodes can be implemented by vertically grown nanowires and be applied to penetrate smoothly and gently into a cell without causing cell apoptosis. In this talk, we describe a method to fabricate vertical Sb nanowire electrode, and present their property characterizations and demonstrate their potential application in pH sensing.

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