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Horizontally aligned single walled carbon nanotube arrays on quartz for electrochemical biosensing[1] YUEHAI YANG, California State University, Chico, XUEWEN WANG, WENZHI LI, JIN HE, Florida International University — We have fabricated and characterized a simple and high performance electrochemical sensor using horizontally aligned single walled carbon nanotube arrays on transparent single crystal quartz substrates grown by chemical vapor deposition. The electrochemical activities of redox probes $Fe(CN)_6^{3-/4-}$, $Ru(NH_3)_6^{3+}$ and protein cytochrome c on these pristine SWCNT thin films have been studied. Because the surface coverage of CNTs is extremely low and aligned, the shape of cyclic voltammograms of these molecules in stationary solution is strongly affected by the mass transport rate of molecules and the interactions between molecules and the SWCNT surface. We also studied the electrochemical flow sensing capability of the device for detecting neurotransmitter dopamine at physiological conditions with the presence of *Bovine serum albumin*. Good sensitivity, fast response, high stability and anti-fouling capability are observed. Therefore, this device shows great potential for sensing applications in complex solution.

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