عنوان فارسی مقاله:
ترانزیستورهای اثرمیدانی بر اساس حامل های بار پروتونی

عنوان انگلیسی مقاله:
Field effect transistor based on protons as charge carriers

توجه!
این فایل تنها قسمتی از ترجمه میباشد. برای تهیه مقاله ترجمه شده کامل با فرمت ورد (قابل ویرایش) همراه با نسخه انگلیسی مقاله، اینجا کلیک مایید.
4. Device characterization and measurements

The performances of the assembled devices were tested using bi-distilled water as the proton-containing medium. Pure water is an almost perfect isolator; however, pure water practically does not exist. Water molecules turn by auto-ionization into hydronium ion (H₃O⁺) and an associated hydroxide ion (OH⁻) at a rate of $K_w = 1.0 \times 10^{-14}$ mol/l at 25°C [9]. This ion concentration contributes to the maximal resistivity of water of 18 MΩ·cm. Furthermore, marginal amounts of contaminants from the atmosphere (mainly carbon dioxide and salt particles) in concentrations less than few ppb further reduce the resistivity of water to ~ 1 MΩ·cm [7]. While generally the water purity is questionable, it was assumed in our experiments that the main charge transport proceeded via proton ions [1, 2]. It is also assumed that the SiO₂⁻ charges in the surfaces of the nanochannels were partially neutralized by highly mobile K⁺ ions during the electrostatic bonding of the gate structure.