Electro-responsive asymmetric nanopores in polyimide with stable ion-current signal

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For the preparation of a single asymmetrically shaped nanopore in a polyimide membrane, Kapton foils were irradiated with single heavy ions and subsequently etched from one side in sodium hypochlorite (NaOCl). The other side of the membrane was protected from etching by a stopping medium containing a reducing agent for hypochlorite ions (OCl^-). The resulting conical nanopore rectified ion current and exhibited a stable ion-current flow.