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(54) **NANOSTRUCTURED DEVICES FOR  
DETECTING AND ANALYZING  
BIOMOLECULES**

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See application file for complete search history.

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(57) **ABSTRACT**

A biosensing FET device, comprising a plurality of nano-  
structured SOI channels, that is adapted to operate in solu-  
tions having a high ionic strength and provides improves  
sensitivity and detection. Generally, the biosensing device  
comprises an underlying substrate layer, an insulator and a  
semiconductor layer and a plurality of channels in the semi-  
conductor layer comprising a plurality of whole or partially  
formed nanopores in the channels.

**12 Claims, 12 Drawing Sheets**