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Dielectric Spectrometers with Planar Nanofluidic Channels

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(54) **DIELECTRIC SPECTROMETERS WITH PLANAR NANOFUIDIC CHANNELS**

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B44C 1/22 (2006.01)

(52) **U.S. Cl.**
USPC **216/2**; 216/83; 216/99; 977/888;
137/833

(58) **Field of Classification Search**
None
See application file for complete search history.

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(57) **ABSTRACT**

Disclosed is a method for fabricating nanofluidic channels having a height of from about 1 nm to about 10 nm. Generally, the method includes formation of doped silicon parallel strips in a silicon substrate, formation of a native oxide layer on the substrate, and etching of the native oxide layer at one of the strips to form a channel of a depth of between about 1 nm and about 10 nm. The method also includes bonding a second wafer to the surface, the second wafer including through etched windows to provide probe contacts to two of the parallel strips during use. These parallel strips provide high-frequency transmission lines in the device that can provide broadband dielectric spectroscopy measurement within the nanochannels.

7 Claims, 11 Drawing Sheets

