PHYSICS

Basic Editing

~~To~~ For comparison, in the experiments, we fabricated two sensors using ordinary HCF and HCF after hydrogen loading ~~respectively~~. The sensors placed in water ~~are~~ were exactly opposite to the PZT ~~respectively~~, and the distances were both 3 cm. As shown in Fig. 7(a) and Fig. 7(c), a continuous sinusoidal ultrasound ~~is~~ was detected effectively by the two sensors. It can be found that these two sensors ~~are able to~~can ~~make an~~ accurately ~~respond~~se to a continuous sinusoidal UW. Fig. 4(b) and Fig. 4(d) show the frequency domain spectra of ~~the~~ a continuous UW calculated by ~~taking~~ the Fourier transformation, which ~~are with respect to~~ depends on the frequency band and the resonance frequency of the PZT. ~~It~~ This well verifies that both the fiber sensors ~~both~~ have a flat response to the frequency components of the broadband signal.

The capacity ~~study~~ of the sensor~~s~~'~~s~~ ~~the~~ in SPM imaging is demonstrated as follows. The model tested is a slope with ~~the~~ an angle of 30 degree as shown in Fig. 9(a). The imaging area was a 2.5 cm × 15 cm oblong region, and the scanning direction was along x ~~axis~~ and y axi~~e~~s in sequence. ~~In~~ During the scanning process, the surrounding temperature was almost constant in the detected media of water. ~~·~~The PZT source and fiber sensor were ~~held~~ placed 3-cm apart on an electric-driven stage ~~with the distance of 3cm~~ that can be move~~d~~ in two dimensions. Fig. 9(b) shows the lateral 2-D image~~ing~~ (along the x axis) of the SPM using the proposed sensor. We can clearly see a high contrast between the two surfaces of the SPM. By scanning along the x ~~axis~~ and y axi~~e~~s repeatedly and data reconstruction, the 3-D ~~outline~~ image of the scanning region ~~is~~ can be obtained, as shown in Fig. 9 (c). ~~It can be obvious seen that~~ The inclined plane and the bottom plane can be obviously seen~~respectively~~. In conclusion, the proposed sensor ~~have~~ has the ability of 3D imaging ~~for~~ of SPM. ~~And w~~With further data ~~processing~~ optimization ~~further~~, the proposed sensor would be applied to complex SPMs.