

Micropyramidal Hillocks on KOH etched <100> silicon for CVD diamond growth

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The unique electrochemical properties of CVD diamond such as a large working potential window, low background current and prolonged stability make it attractive for applications in electroanalysis. However, increasing the superficial area of diamond growth for amplification of the electrode response is still a challenge [1].

In this sense, we have proposed the growth of CVD diamond on p-type (100) silicon etched with KOH solution [2]. A solution 27wt. % KOH in H₂O, 62°C was used to obtain a large number of micropyramids with plane-rectangular shape [3]. on the silicon surface, as shown in Fig.1 (a-b). The height of these pyramids is in the range 0-2 µm. Preliminary results showed that these micropyramidal structures are adequate for diamond growth. Further studies are being carried to investigate the electrochemical properties.

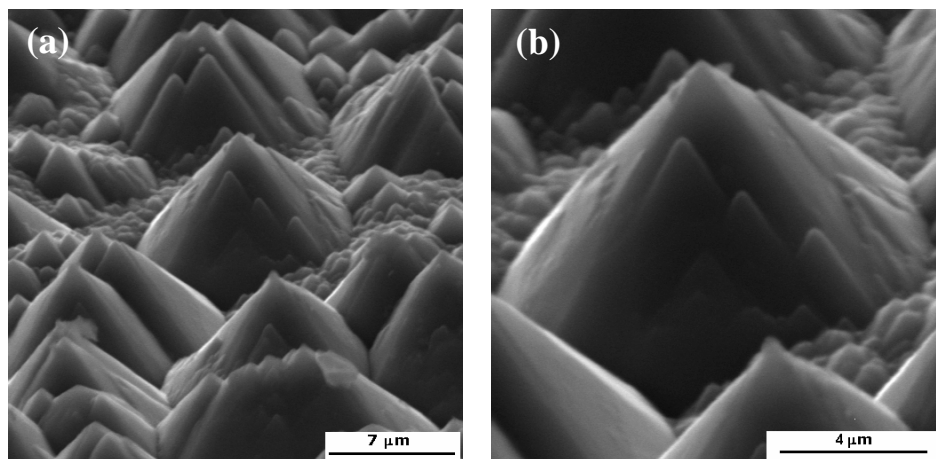


Figure1: SEM micrograph on the silicon surface: (a) larger number the micropyramids with a rectangular base; (b) is magnification the figure (a)

References

- [1] K.L. Soh, W.P. Kang, J.L. Davidson, Y.M. Wong, A. Wisitsora-at, G. Swain, D.E. Cliffel, *Sensors and Actuators B*, **91**, 3 (2003)
- [2] E. Van Veenendaal, K. Sato, M. Shikida, J. van Suchtelen, *Sensors and Actuators A*, **93**, 219, (2001)
- [3] H. Schröder, E. Obermeier, A. Steckenborn, J. Micromech, *Microeng*, **9**,139, (1999)

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