Supplementary Material (ESI) for Journal of Materials Chemistry
This journal is (c) The Royal Society of Chemistry 2008

Supplementary information :

Local silicon doping as a promoter of patterned electrografting of diazonium for directed surface functionalization.

J. Charlier*[a], S. Palacin[a], J. Leroy[b], D. Del Frari[c], L. Zagonel[b], N. Barrett[b], O. Renault[d], A. Bailly[d] and D. Mariolle[d]

Cleaning process description for the locally doped silicon wafers.

The implanted pattern is revealed by atomic force microscopy (AFM) imaging where doped areas appear lower than undoped ones, with an average height difference of 7 nm. This topography is due to the manufacturing process. After implantation and before annealing, the wafers underwent various cleaning treatment:

- oxygen plasma
- H_2SO_4/H_2O_2, 80°C, 10 minutes
- $HCl/H_2O_2/H_2O$, 80°C, 5 minutes to remove the resin used for the photolithography.

The oxide layer formed by this process was then etched by HF treatment (BE HF 10%). After activation (annealing at 1000°C for 30 minutes under N_2 atmosphere), the wafers were once again cleaned by HF treatment and then stored at laboratory atmosphere. It is known that the growth of the oxide layer is more efficient on the implanted area than on the intrinsic part,[1-5] the successive HF treatments lead to a deeper etching of the doped area than the intrinsic part.

1. C. P. Ho and J. D. Plummer, *J. Electrochem. Soc.*, 1979, **126**, 1516.
2. C. P. Ho, J. D. Plummer, J. D. Meindl, and B. E. Deal, *J. Electrochem. Soc.*, 1978, **125**, 665.
3. P. K. H. Ho, J.-S. Kim, J. H. Burroughes, H. Becker, S. F. Y. Li, T. M. Brown, F. Cacialli, and R. H. Friend, *Nature*, 2000, **404**, 481.
4. F. Yano, A. Hiraoka, T. Itoga, H. Kojima, K. Kanehori, and Y. Mitsui, *Appl. Surf. Sc.*, 1996, **100/101**, 138.
5. F. Yano, A. Hiraoka, T. Itoga, A. Matsubara, H. Kojima, K. Kanehori, and Y. Mitsui, *J. Vac. Sci. technol. B*, 1996, **14**, 2707.