Electronic Supplementary Material (ESI) for Chemical Science

Towards organic film passivation of germanium wafers using diazonium salts: mechanism and ambient stability

Supporting Information

XPS analyses

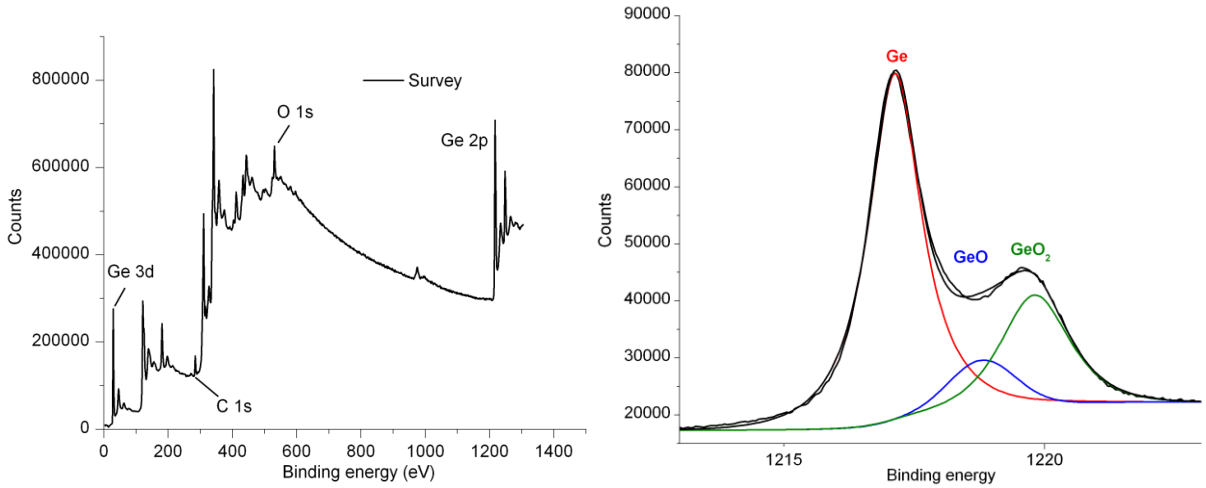

Fig. S1: XPS survey and Ge 2p core level spectra of a pristine Ge surface

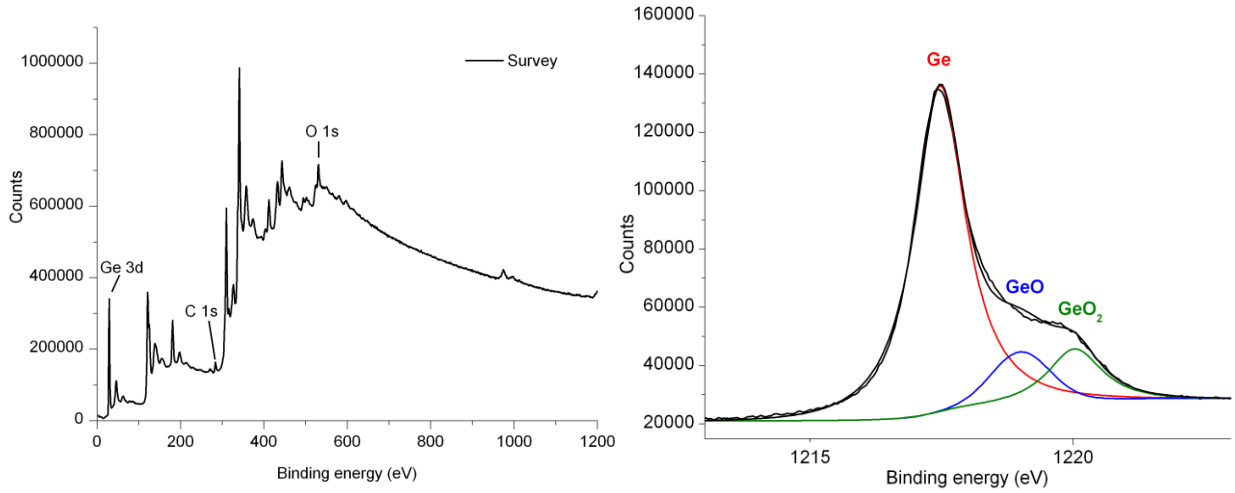

Fig. S2: XPS survey and Ge 2p core level spectra of a HCl-treated Ge surface

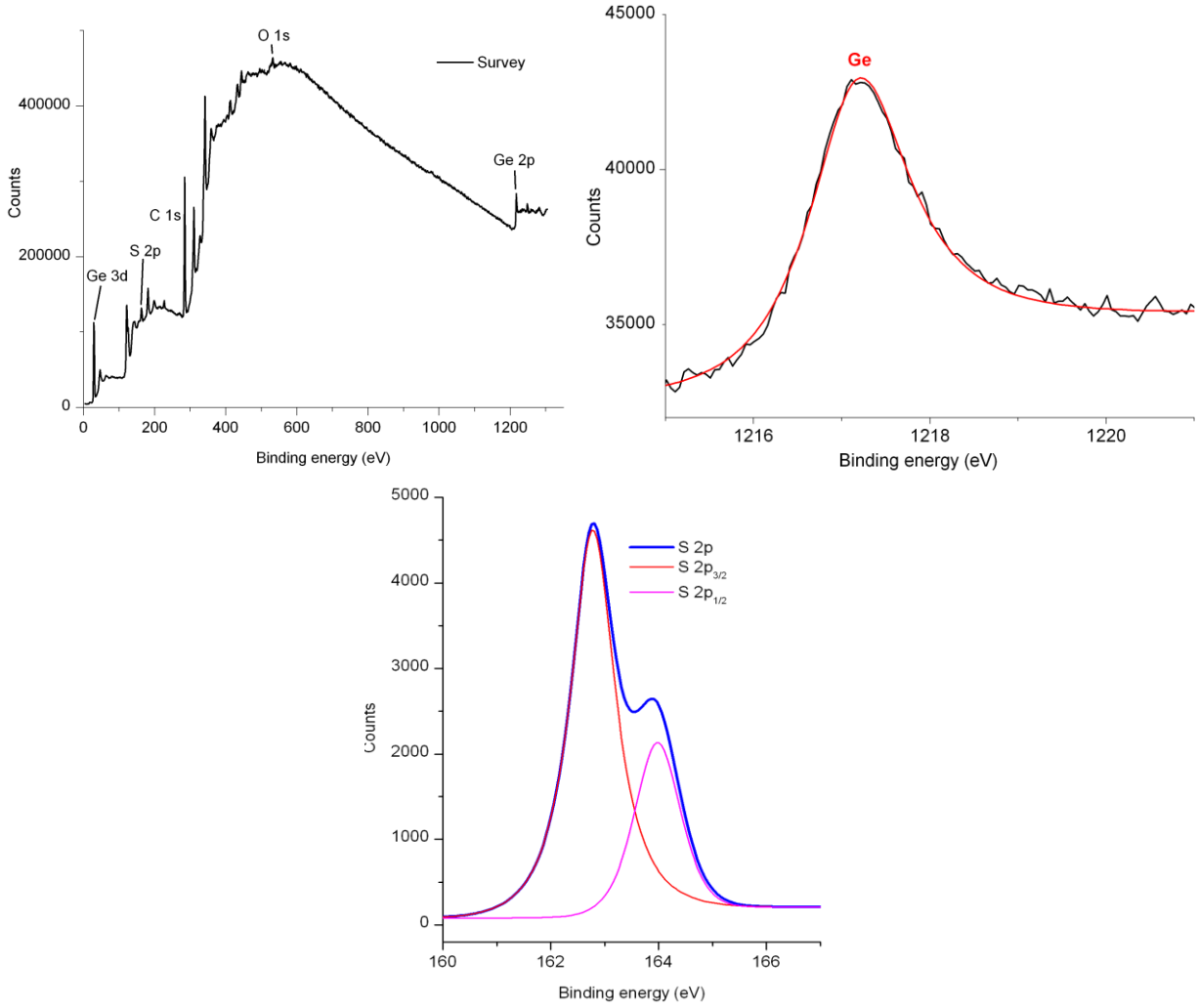

Fig. S3: XPS survey, Ge 2p and S 2p core level spectra of a HCl-treated Ge surface protected with a SAM of nonanethiol

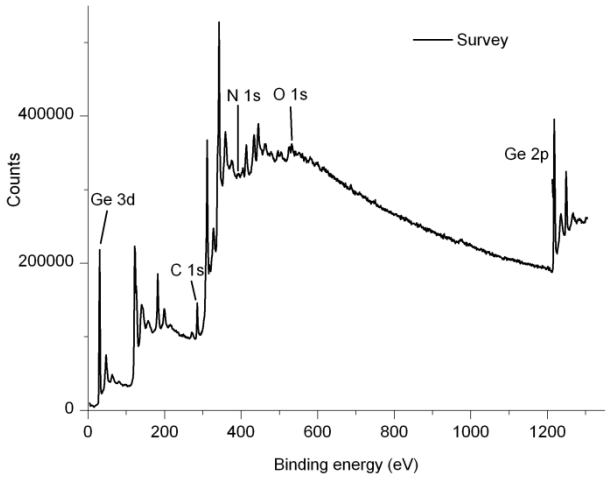

Fig. S4: XPS survey spectrum of a HCl-treated Ge surface functionalized with BD

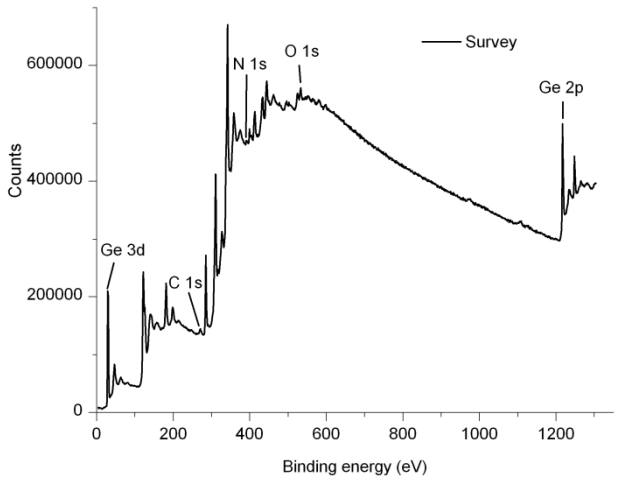

Fig. S5: XPS survey spectrum of a HCl-treated Ge surface functionalized with CN-BD

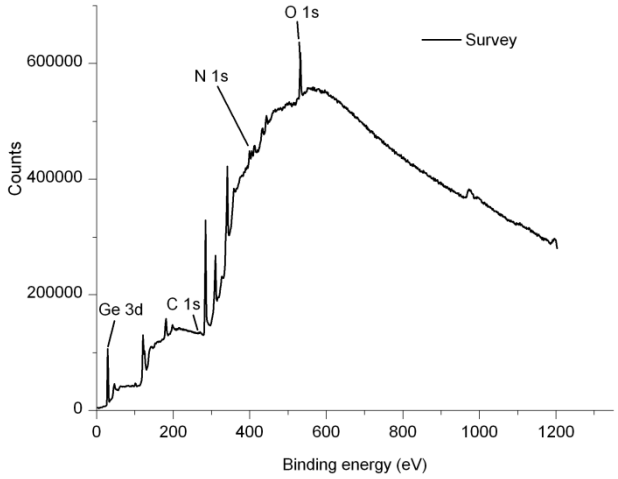

Fig. S6: XPS survey spectrum of a HCl-treated Ge surface functionalized with NBD

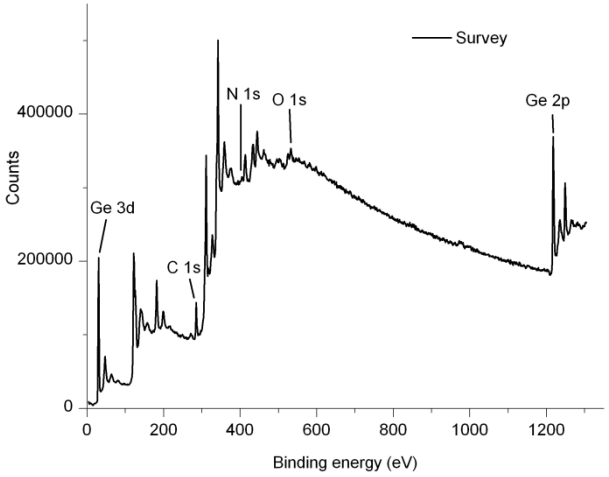

Fig. S7: XPS survey spectrum of a HCl-treated Ge surface functionalized with OMe-BD

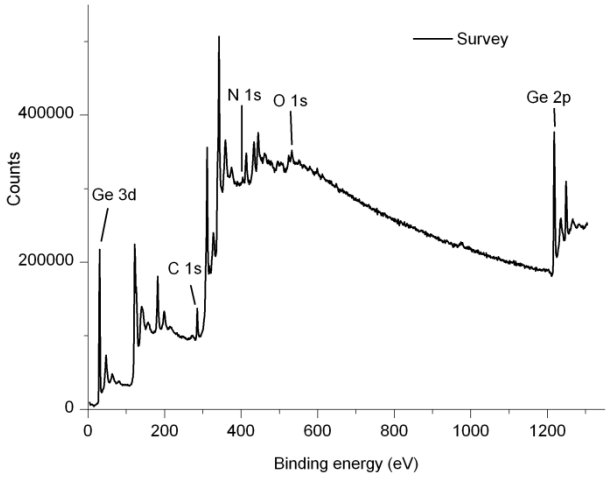

Fig. S8: XPS survey spectrum of a HCl-treated Ge surface functionalized with NMe_2-BD

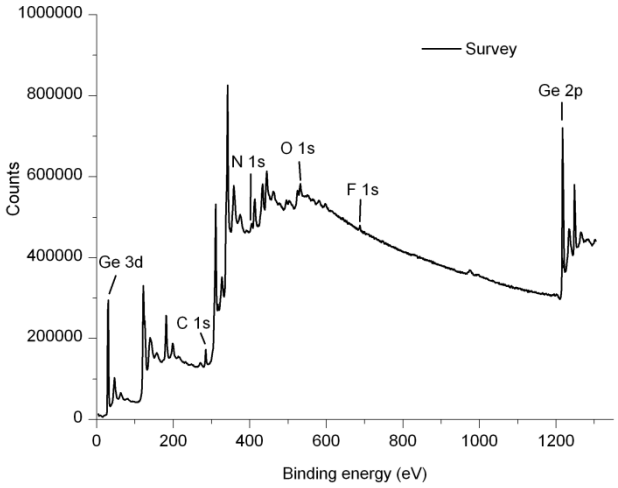

Fig. S9: XPS survey spectrum of a HCl-treated Ge surface functionalized with CF_3-BD

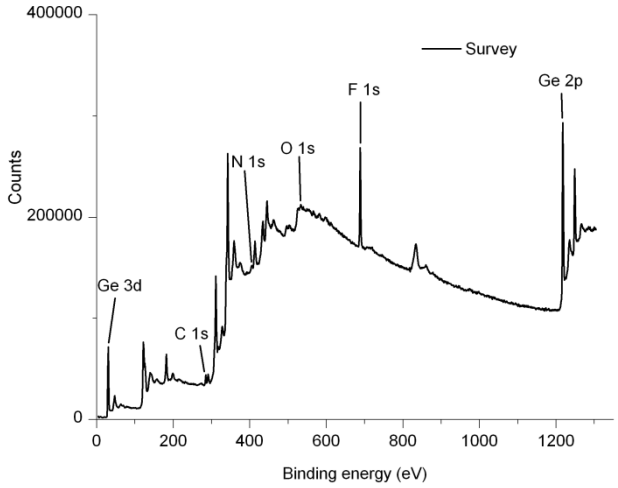

Fig. S10: XPS survey spectrum of a HCl-treated Ge surface functionalized with C_8F_{17}-BD

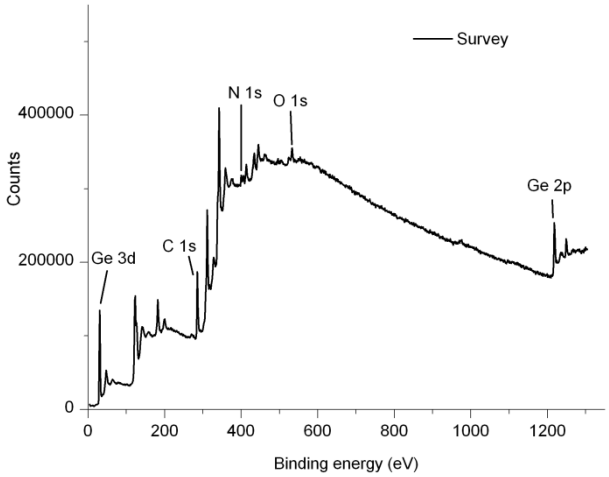

Fig. S11: XPS survey spectrum of a HCl-treated Ge surface functionalized with DO-BD

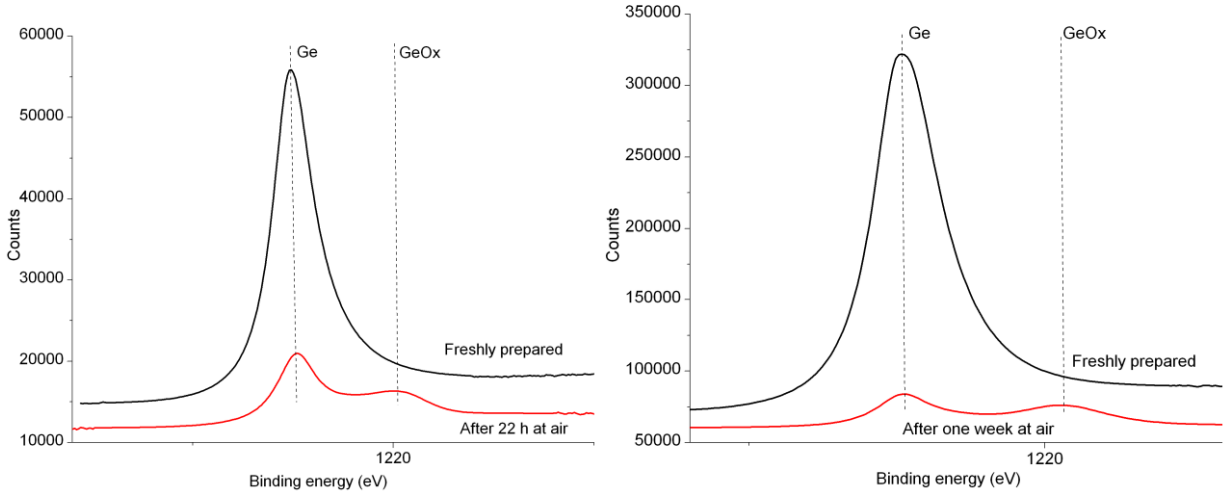

Fig. S12: XPS survey spectra of a nonathiolate SAM on a HCl-treated Ge surface freshly prepared (left, black line), after 22 hours at air exposure (30 % reoxidation, left, red line) and XPS survey spectra of a HCl-treated Ge surface functionalized with CF_3-BD freshly prepared (right, black line), after one week at air exposure (54 % reoxidation, right, red line)

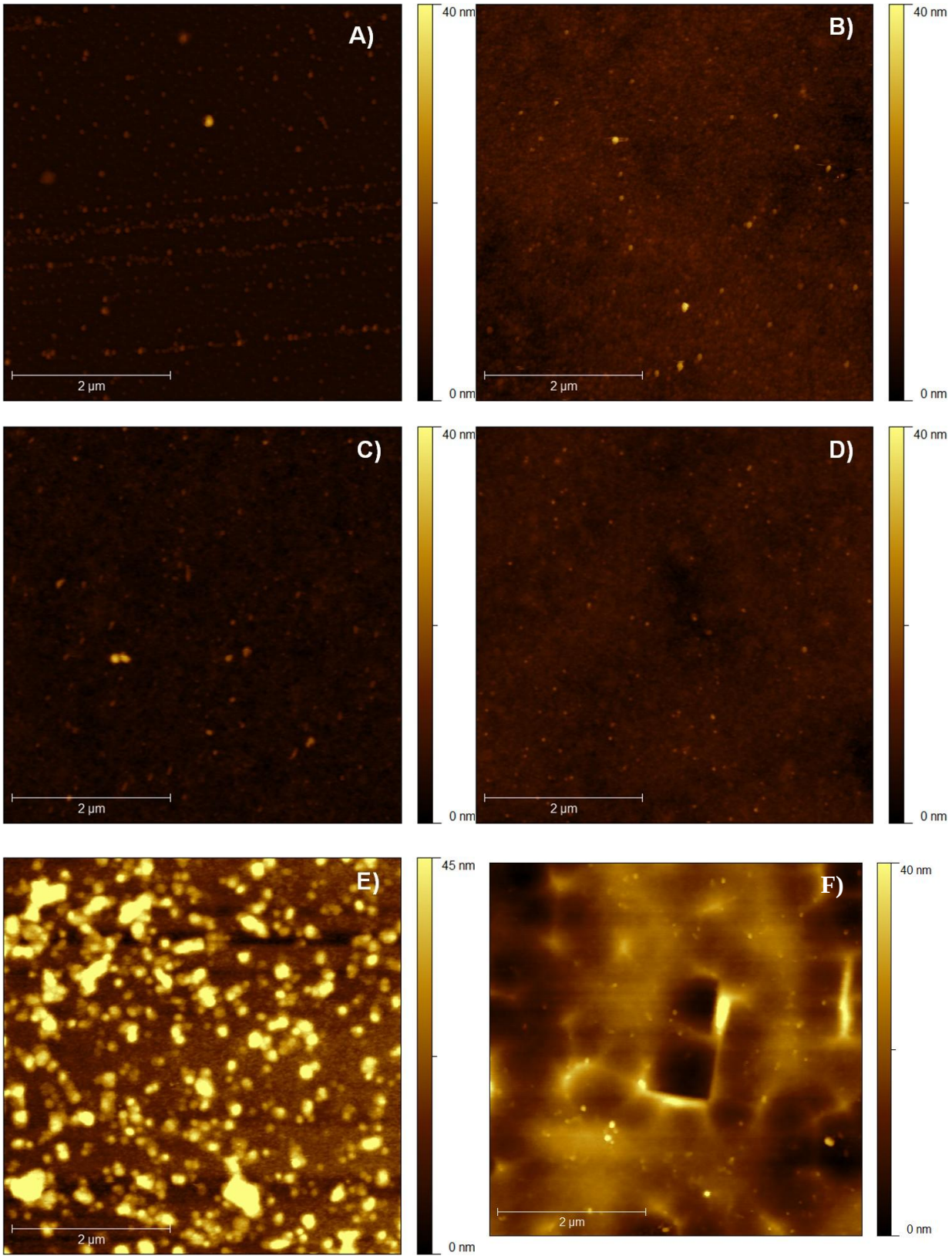

Fig. S13: AFM images of Ge surfaces grafted with CN-BD at -18°C (A) (Rq= 1.26 nm), 0°C (B) (Rq= 2.05 nm), 25°C (C) (Rq= 1.43 nm), 40°C (D) (Rq= 1.47 nm), 60°C (E) (Rq= 6.88 nm) and 80°C (F) (Rq= 5.00 nm).

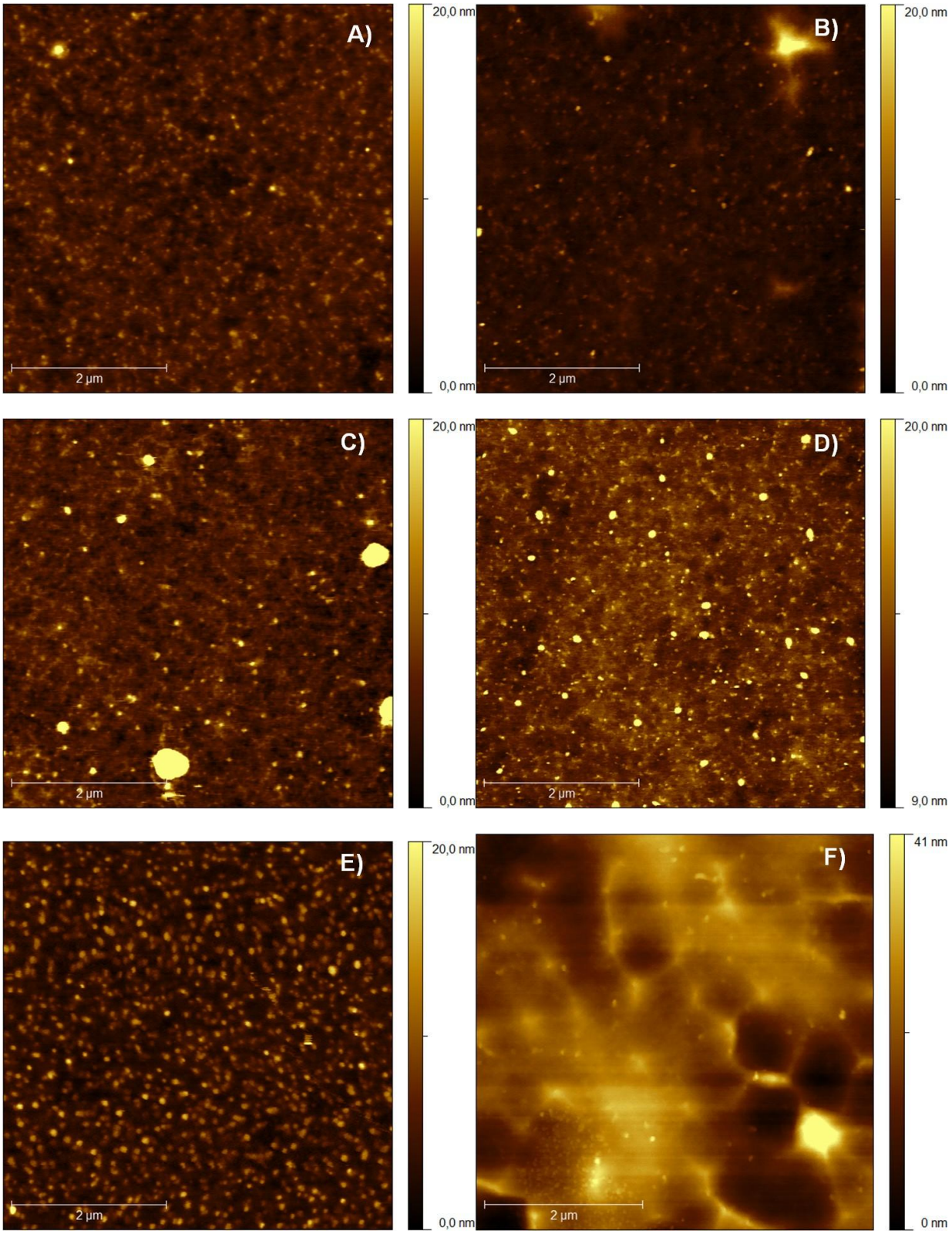

Fig. S14: AFM images of Ge surfaces grafted with CN-BD for 5 min (A) (Rq= 1.58 nm), 10 min (B) (Rq= 1.75 nm), 15 min (C) (Rq= 1.16 nm), 30 min (D) (Rq= 1.64 nm), 45 min (E) (Rq= 2.28 nm) and 60 min (F) (Rq= 6.10 nm).

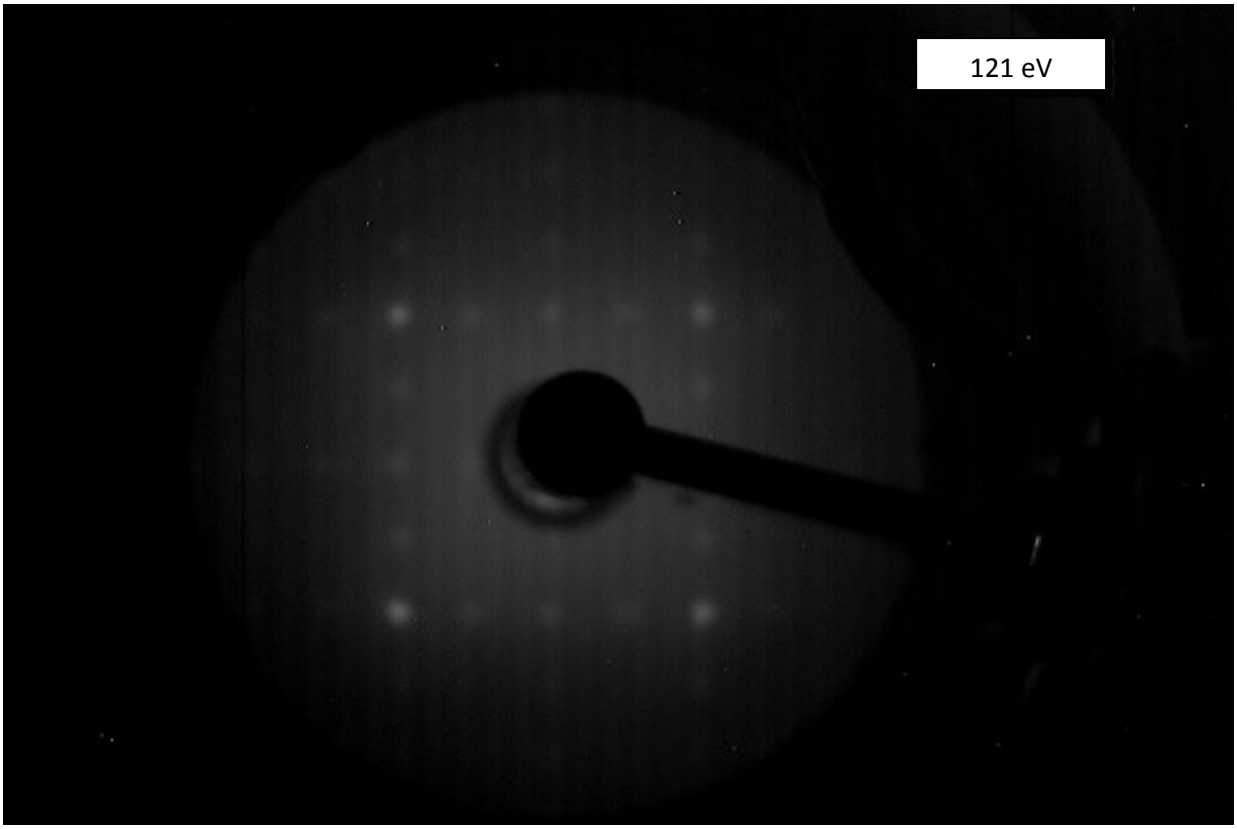

Fig. S15: LEED pattern of a HCl-treated Ge surface at 121 eV showing the (100) orientation and the 2x1 reconstruction.