



<110> directions. Storing the samples at normal laboratory conditions the dots disappear after about 8 and 16 months, respectively.

The aim of the experiment is to reproduce the conditions for the growth of the dots by in-situ thermal treatment and their detection by a quick x-ray scattering method. A formerly implanted ( $2.5 \times 10^{15} \text{ cm}^{-2} \text{ Ge}^+$  of 4 MeV) and annealed (at 650 °C for 1 h) Si(001) wafer was heated in a furnace from 600 °C to 905 °C in steps of 50 °C for 20 min in each case. According to the findings above, it is expected that during this annealing procedure surface dots grow. The grazing incidence small-angle x-ray scattering (GISAXS) geometry [1], highly sensitive to mesoscopic dots at the surface, is the suitable tool to study surfaces independent on their crystalline or non-crystalline nature. At an annealing temperature of 850 °C some marks of an ordered surface structure (see Fig. 1, arrows mark fringe maxima) may be seen. From them a surface structure period of 320 nm can be calculated. At other temperatures such fringes were not be observed.

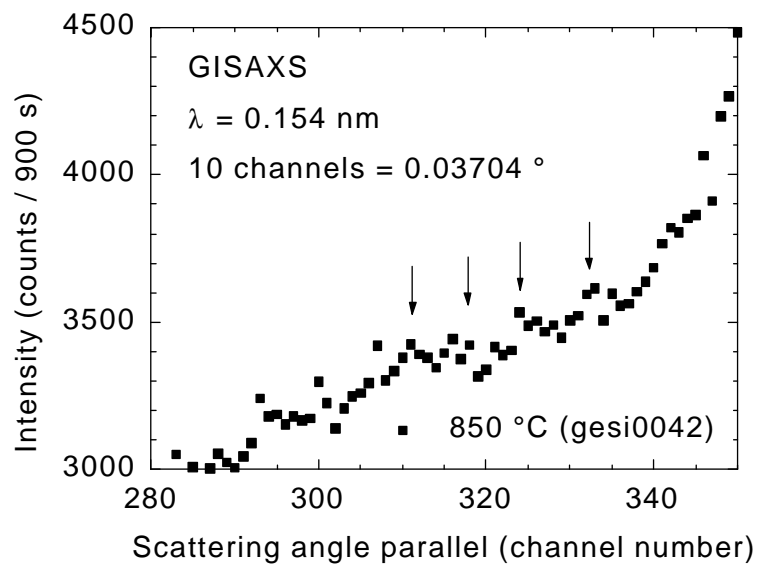


Fig. 1

GISAXS diagram of Si(001) implanted with  $2.5 \times 10^{15} \text{ cm}^{-2} \text{ Ge}^+$  (4 MeV) and formerly annealed at 650 °C for 1 h as-measured for an annealing temperature of 850 °C

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[1] T. H. Metzger, I. Kegel, R. Paniago, J. Peisl, J. Phys. D: Appl. Phys. 32 (1999) A202.