

SURFACE STRESSES AT THE INITIAL STEPS  
OF THE  $\text{Ge}_x\text{Si}_{1-x}/\text{Si}(001)$  SURFACE OXIDATION

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S u m m a r y

Elastic stresses arising at the clean  $\text{Ge}_x\text{Si}_{1-x}/\text{Si}(001)$  surface, as well as at the initial stages of its oxidation, are considered qualitatively by analyzing the changes of unit cell dimensions occurring owing to the ad-dimer formation or the atomic or molecular adsorption on the unit cell surfaces. The stress character is found to be almost identical for the clean  $\text{Ge}_x\text{Si}_{1-x}/\text{Si}(001)$  surface and the  $\text{Ge}_x\text{Si}_{1-x}/\text{Si}(001)$  surface with adsorbed oxygen molecules or one to three adsorbed oxygen atoms. In addition, the surface stresses revealed a significant anisotropy: they turned out compressive along the dimer rows and three times as large as tensile stresses in the perpendicular direction (along the interdimer bonds).