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Temperature Induced Modifications of SiC Interfaces studied by
High Resolution Electron Energy Loss Spectroscopy\textsuperscript{1} J.A. SCHAEFER, M.
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Institut fuer Physik und Institut fuer Mikro- und Nanotechnologien, Technische Universitaet Ilmenau — High resolution electron energy loss spectroscopy (HREELS) is
a fascinating tool for studying electronic and vibrational properties in the near sur-
face regime. For SiC, a wide band gap semiconductor suited for several applications,
the surface and interface chemical reactivity needs to be thoroughly understood. In
addition to atmospheric adsorbates, C- and Si-terminated cub- and hex-SiC, changes
in carrier concentration profiles and band bendings can be monitored by compar-
ing HREELS-data with dielectric theory. There, the surface state density related
to the reconstruction type and surface composition is important together with the
substrate temperature. For oxygen on 6H-SiC (0001), we observed for the first time
new vibrational modes linked to distinct Si-O-Si vibrations, namely its asymmetric-
and symmetric stretching vibrations and wagging motion. The energy and intensity
of the asymmetric stretching frequency is analogous to the initial stage oxidation of
Si surfaces.

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