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Low-energy electron diffraction study of Si(111)-($\sqrt{3}\times\sqrt{3}$)R30° -B
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WEISON TU, DANIEL MULUGETA, P.C. SNIJDERS, H.H. WEITERING, Uni-
versity of Tennessee, Knoxville — Metal-semiconductor interfaces are important for
the function and manufacture of advanced electronics, such as those used in com-
puters, tablets and phones. They also exhibit many interesting physical phenomena
that are interesting from a fundamental point of view, including exotic phases and
phase transitions.¹ This study involves the analysis and modeling of the surface
structure of a thin film of boron on the Si(111) surface. The addition of metal
atoms to the surface of Si(111) simplifies its structure by removing a “rippling” that
is present on the clean surface. The low-energy electron diffraction (LEED) data
were measured at a surface temperature of 80 K at ORNL. The LEED analysis uti-
lized the SATLEED analysis programs. The results are similar to those obtained in
an earlier LEED study for this interface, but the precision is higher due to the larger
dataset employed.^{2,3} The results of this study will be compared to other studies of
this and similar systems. We acknowledge the Eberly College of Science for funding
this project.

¹González, Guo, Ortega, Flores, Weitering. Phys. Rev. Lett. **102**, 115501 (2009)

²P. Baumgartel *et al.* Phys Rev B. **59** (1999)

³H. Huang, S. Y. Tong, W. S. Yang, H. D. Shih, F. Jona. Phys Rev B. **41** (1990)

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