

Abstract Submitted  
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**Spin-polarized ion scattering spectroscopy study on Si/Fe(100) surfaces**<sup>1</sup> TAKU SUZUKI, SHUNICHI HISHITA, National Institute for Materials Science — We investigated surface magnetic structure in the initial stage of Si deposition on an Fe(100) surface by spin-polarized ion scattering spectroscopy (SP-ISS). [1] We found silicidation at the Si/Fe interface after Si deposition followed by annealing at 823 K. The silicidation occurs by the incorporation of silicon into the Fe substrate via the substitutional site of bcc Fe. After annealing, the incorporated Si atoms are distributed in surface layers several nanometers thick. The SP-ISS analysis revealed that the average magnetic moment of Fe in the silicide surface layer is about 70% of that of Fe in the Fe(100) surface layer, whereas that of Si is almost zero. These surface magnetic moments are discussed in terms of the local magnetic environment. It is likely that the outermost surface of the silicide layer has an atomic arrangement similar to that of Fe<sub>3</sub>Si(100) with surface termination by the Fe-Si plane.

[1] T.T.Suzuki and S.Hishita, Appl.Surf.Sci.259(2012)166.

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