

平成 18 年 8 月 18 日

応用物理学会北海道支部
会員各位

応用物理学会北海道支部

講演会のお知らせ

下記講演会を開催いたしますので、多数ご参加下さいますようご案内申し上げます。

演題：Formation and Characterization of Si/Ge Nanostructures at the Atomic Level

講師：Bert Voigtlander 氏

(Forschungszentrum Jülich(Germany), Priv. Doz. Dr.)

日時：平成 18 年 9 月 4 日 (月) 11:00 ~ 12:00

場所：北見工業大学機能材料工学科会議室

主催：応用物理学会北海道支部

講演の要旨

Our approach for the synthesis of nanowires is to use pre-existing step edges on the Si(111) surface as templates for the growth of Ge wires at the step edges. In the step-flow growth the deposited atoms are incorporated exclusively at the step edges and the growth proceeds by a homogenous advancement of the steps. Alternating deposition of Ge and Si is used to fabricate two-dimensional Si and Ge nanowires with a width down to ~ 3.5 nm and a thickness of one atomic layer (0.3 nm) by self-assembly on a Si(111) surface. In case of the important system Si/Ge it has been difficult to differentiate between Si and Ge due to their similar electronic structure. Here we use one atomic layer of Bi terminating the surface is used to distinguish between the elements Si and Ge. A difference in apparent height is measured in scanning tunneling microscopy (STM) images for Si and Ge, respectively. The reason for the height difference observed in STM will be discussed. Also different kinds of

two-dimensional Si/Ge nanostructures like alternating Si and Ge nanorings having a width of 5-10 nm were grown. The method to distinguish between Si and Ge allows to study intermixing on the nanoscale and to identify the fundamental diffusion processes giving rise to the intermixing.

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