

MAR07-2006-000108

Abstract for an Invited Paper
for the MAR07 Meeting of
the American Physical Society

Kinetic measurements during the vapor-liquid-solid growth of Si and Ge nanowires

SUNEEL KODAMBAKA, IBM

Growth of nanowires using vapour-liquid-solid (VLS) process has been successfully demonstrated over the past 40 years, but the exact mechanisms are not well understood. In this talk, we will present *in situ* transmission electron microscopy studies of Si and Ge nanowire growth kinetics as a means to develop a fundamental understanding of the mechanisms governing their shape and structure. From the images of the wires, collected at video rates as a function of growth pressure, temperature, and gas environment, we identify several novel aspects of wire growth: Ostwald ripening of catalyst droplets on top of the wires, effect of oxygen on Si wire morphology, and VLS growth of Ge wires at temperatures below the bulk Au-Ge alloy eutectic temperature. We will consider the generality and applicability of these results for the growth of nanowires of other materials.