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Vapor-Liquid-Solid Glancing Angle Deposition (VLS-GLAD): A New Approach to Fabricate Crystalline Semiconductor Nanowires ARIF SINAN ALAGOZ, TANSEL KARABACAK, Department of Applied Science, University of Arkansas at Little Rock — Vapor-liquid-solid (VLS) method has become one of the few and most powerful bottom-up single crystal nanowire growth techniques. On the other hand, control of growth direction and crystal orientation of semiconductor nanowires stand as major issues in VLS technique. In order to overcome these challenges, we developed a new vapor-liquid-solid glancing angle deposition (VLS-GLAD) fabrication approach for the growth of semiconductor nanowire arrays with a controlled geometry and crystal orientations. VLS-GLAD is a physical vapor deposition nanowire fabrication approach based on selective deposition of nanowire source atoms onto metal catalyst nanoislands placed on a crystal wafer. In this technique, collimated obliquely incident flux of source atoms selectively deposit on catalyst islands by using "shadowing effect". Geometrical showing effect combined with conventional VLS growth mechanism leads to the growth of tilted crystalline semiconductor nanowire arrays. In this presentation, we show the morphological and structural properties of tilted single crystal Si and Ge nanowire arrays fabricated by utilizing a conventional thermal evaporation system for VLS-GLAD.

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