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Electrical characterization of GeSn grown on Si using ultra high vacuum chemical vapor deposition method MO AHOUJJA, S. ELHAMRI, University of Dayton, J. KOUVETAKIS, J. TOLLE, Department of Chemistry and Biochemistry, Arizona State University, Arizona, MEE YI RYU, Y.K. YEO, Department of Engineering Physics, Air Force Institute of Technology, Wright-Patterson AFB, Ohio — Recently, there has been considerable interest in growing $Ge_{1-x}Sn_x$ alloys on Si with $x < 0.2$ for the purpose of developing optoelectronic devices that can be integrated with Si-based electronic technology. Here we report Hall coefficient and resistivity measurements as a function of temperature from thin epitaxial layers of GeSn grown on Si substrates using ultra high vacuum chemical vapor deposition. The Hall measurements show that GeSn samples with Sn concentrations of 1.5 and 2 % are of high quality. The hole concentration for the boron doped $Ge_{0.98}Sn_{0.02}$ sample at room temperature is 7.1x10^{18} cm^{-3} while that of the as-grown undoped sample is 9.8x10^{16} cm^{-3}. The measured hole mobility for $Ge_{0.98}Sn_{0.02}$ alloys with carrier concentrations greater than 10^{18} cm^{-3} are found to be comparable to those found in Ge samples with similar doping concentrations.

Mo Ahoujja
University of Dayton

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