

Abstract: The thesis is focused on study of growth of tin chains on Si(100) surface deposited by vacuum evaporation at temperatures below room temperature. Scanning tunneling microscopy (STM) was used for surface imaging and growth characteristics were determined from the data. Comparison of the characteristics for different deposition temperatures and two different coverages shows a dominant role of the same growth mechanism in all cases. An influence of heating toward room temperature on chain length distribution of structures prepared at low temperatures is described and discussed. A role of C-defects at the chain growth and a corresponding influence on shape of a scaling function of the chain length distribution is discussed as well. Properties of the STM system with liquid nitrogen cooling were successfully tested together with developed pumping of nitrogen into a container inside the STM vacuum chamber.