UNH Materials Science Seminar

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DeMeritt Hall 209B
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Surface alloy composition determination with nanometer resolution

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Controlling the composition of thin-film alloys is critical in a wide range of technologies. However, measuring inhomogeneous alloy compositions at surfaces is difficult. A new technique has been developed to determine alloy concentrations via low-electron energy microscopy (LEEM). We have studied the formation of the well-known CuPd surface alloy phase grown on Cu(100). We investigate the composition on the terrace, far from steps, and the step-induced inhomogeneous structure. Depositing Pd at 500 K causes the formation of a c(2x2) Pd checkerboard structure in the 2nd Cu layer. Far from the steps, the alloy is spatially uniform. However, close to the step, the 2^{nd} layer concentration is significantly reduced, while the 3^{rd} layer concentration is enhanced due to the step flow during growth.