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Phase Separation of a Model Alloy Mixture C_{60}-C_{70} on a Cu(111) Surface.

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Phase separation of C_{60}, C_{70} binary mixture at various compositions was studied after quenching from 2D fluid temperature. Because of the shape difference, C_{70} molecules were imaged differently from C_{60} in STM images. Highly non-linear and irreversible phenomena, late stage growth, were observed, revealing time dependent order parameter. The 2D structure factor, calculated from time dependent compositional correlation function, was quite different from that measured by small angle neutron scattering due to finite domain size, symmetry and atomic resolution of STM. Although time dependence of the measured length scale could not be explained by either Lifshitz-Slyzov or Lifshitz-Allen-Cahn theory, the domain-size distribution could be dynamically scaled by a single function. The origin of the deviation and possible use of STM for late stage growth will be discussed.