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^{3}He Condensation and Dissolution at Layer Completion in ^{3}He-^{4}He Mixtures Adsorbed on Carbon Nanotubes GARY WILLIAMS, EMIN MENACHEKANIAN, JOHN ABRAHAM, BOB CHEN, VITO IAIA, ANDREW LI, SERGEY SUSHCHIKH, UCLA — The condensation and then dissolution of ^{3}He has been observed at layer completion in ^{3}He-^{4}He mixtures adsorbed on multiwall carbon nanotubes. With an initial fill of 3.5 layers of ^{4}He, the addition of ^{3}He in five steps of 0.07 layers uniformly reduces T_{KT}, showing that the ^{3}He is uniformly distributed. With the final 0.35 layer of ^{3}He still present, additional ^{4}He is then added at low temperature (225 mK). An abrupt transition is observed in the third sound signal very near the total-thickness 4.0 layer completion, where the Q factor suddenly drops by two orders of magnitude and the sound speed becomes constant. With the addition of another 0.1 layer of ^{4}He the sound speed starts to decrease again and the Q climbs back to its initial value. We postulate that this behavior marks the formation of condensed ^{3}He "islands" induced by the layer completion, and then the ^{3}He dissolves back to uniform coverage past that point.

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