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Temperature dependent Scanning Tunneling Spectroscopy of impurities in Bi2Sr2CuO6+x through the transition temperature KAMALESH CHATTERJEE, DOUGLUS WISE, MICHAEL BOYER, MIT, TAKESHI KONDO, TSUNEHIRO TAKEUCHI, HIROSHI IKUTA, YAYU WANG, ERIC HUDSON, MIT — Scanning Tunneling Microscopy has been used to study detailed electronic spectrum in atomic scale defects in high temperature superconductors. We present Scanning Tunneling Spectroscopy of impurities in $Bi_2Sr_2CuO_{6+x}$(Bi-2201) over a wide range of temperatures. Surprisingly, native impurity resonances, similar to the ones previously observed in $Bi_2Sr_2CaCu_2O_{8+x}$ (Bi-2212), spatially coexist with the superconducting gap at low temperatures and survive almost unchanged through the superconducting transition temperature T_c. We shall discuss the implications of these findings on the relationship between superconducting gap and pseudogap in these materials.

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