

# Evidence for Current-Driven Phase Slip Lines in Submicron High- $T_c$ Superconducting Wires

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We present superconducting current-voltage characteristics of submicron  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  wires. The submicron-wide wires were fabricated using a chemical-free technique based on selective epitaxial growth. Pulsed current-biased and voltage-biased measurements were made between 4.2 K and  $T_c$  and as a function of an applied magnetic field. The current-voltage characteristics exhibit distinctive behaviour suggesting that the current-driven or voltage-driven transition of our submicron high- $T_c$  wires into the resistive state is through the formation of phase slip lines.