

# Electrostatic modulation of superconductivity in few nm $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$ films

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Ultrathin  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$  ( $\text{Bi}2212$ ) films with thickness varying from 1 to 2 unit cells were prepared on glass substrates by anodic bonding [1, 2], from an optimally doped precursor single crystal. The as-prepared samples exhibited critical temperatures ranging from 81K to 51 K. These were doped electrostatically using the Space Charge Doping method [3, 4], to vary the critical temperature ( $T_c$ ) in a reversible manner. We show results of low temperature transport measurements as a function of electrostatic doping. We discuss the modification of  $T_c$ , estimations of the variation of carrier concentration and the repercussion of these on the phase diagram.

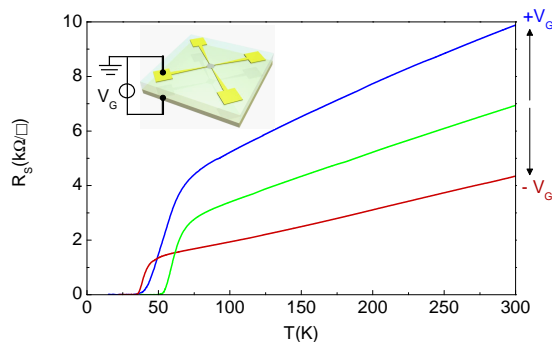


Figure 1: Modulation of normal state and superconductivity by electrostatic doping in ultrathin  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$  films

## References

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