A POSSIBLE MECHANISM FOR THE INCREASE IN T_c OF THE MULTILAYER CUPRATE METAL OXIDE SUPERCONDUCTORS

E. A. Pashitskii

Institute of Physics, Academy of Sciences of Ukraine, 252650 Kiev, Ukraine

A plasmon mechanism for superconductivity in a layered metal with a narrow $2D$ band near the Fermy level leads to an increase in the critical temperature (T_c) of the superconducting transition with an increase in the number (n) of the $2D$ conducting layers, given the proximity effect between layers [1]. There is a tendency toward saturation of the dependence $T_c(n)$ at large values of n. This tendency is in qualitative agreement with the experimental behavior of T_c as function of n in the layered cuprate metal oxides $Bi_2Sr_2Ca_{n-1}Cu_nO_x$ and $Tl_mBa_2Ca_{n-1}Cu_nO_x$ ($m = 1.2$) with closely-packed stacks of the CuO_2 layers [2,3], and would explain, why does the high-T_c superconductivity exist in the compound $(Ca_{1-x}Sr_x)_{1-y}CuO_2$ with the "infinite cuprate layers" [4].

1. *Pashitskii E. A.*, Pis'ma Zh. Eksp. Teor. Fiz. **55**, 332 (1992) [JETP Lett. **55**, 333 (1992)].
2. *Sheng Z. Z., Hermann A. M.*, Nature **332**, 138 (1988).
3. *Ihara H. et al.*, Ibid. **334**, 510 (1988).
4. *Azuma M. et al.*, Ibid. **356**, 775 (1992).