Superconducting properties of phosphorus added (Bi, Pb)–Sr–Ca–Cu–O system

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Superconducting properties of phosphorus added $(Bi_{0.7}Pb_{0.3})SrCaCu_{1.5}O_y$ system using two mixing ratios, $Ca_3(PO_4)_2$: $CaCO_3 = 1:4$ and $1:1$, have been investigated using electrical resistivity, ac magnetic susceptibility and X-ray powder diffraction measurements. The results show that phosphorus substitution for bismuth using phosphates in a solid state reaction is unlikely to be realised easily. This method results in the formation of a multiphase material with a lower transition temperature.