초청강연2

Structural control and electrical properties of cuprate composites

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In this lecture, a relationship between electrical properties and structures is discussed for composites consisting of two kinds of cuprate compounds: PrBaCuO and RBaCuO (R: rare earth element like Y, Gd, Nd). The former compound PrBaCuO is insulator and the latter one RBaCuO is superconductor. Owing to their chemical similarity and physical difference, the structure in such composites can easily be controlled to produce a large variety of transport characteristics. Electrical conduction reflecting the structural behavior is discussed in particular reference to the percolation process. Non-ohmic conduction recently observed will also be shown in terms of a nanometric network-structure of the composites.