superconductor having the inert metal deposited thereon.

What is claimed is:

1. In a system that includes a superconductor formed from a high-T_c superconducting material and having at least one superconductor surface, a contact unit formed with said surface, said contact unit comprising electrically conductive means formed from an inert metal with said electrically conductive means having a portion contacting said superconductor surface to establish a contact resistivity therebetween that includes a range of between $<10^{-8}\Omega$-cm^2 and $10^{-10}\Omega$-cm^2.

2. The contact unit of claim 1 wherein said inert metal is a noble metal.

3. The contact unit of claim 1 wherein second contact unit enables an electrical connection to be made at said superconductor surface, and wherein said contact unit includes a second portion adapted to have said electrically conductive means contactable therewith.

4. The contact unit of claim 3 wherein said contact unit includes a contact pad formed from said inert metal.

5. A superconducting apparatus, comprising:

a superconductor formed from high-T_c superconducting material and having at least one surface; and

an electrically conductive element formed from an inert metal with said element having at least a firs surface portion in contact with said superconductor surface to form a contact unit therewith, with the contact resistivity between said superconductor surface and said first surface of said electrically conductive element including a range of between $<10^{-8}\Omega$-cm^2 and $10^{-10}\Omega$-cm^2.

6. The superconducting apparatus of claim 5 wherein said electrically conductive element has a second surface portion, and wherein said apparatus also includes electrically conductive means connected with said second portion of said element to enable transmission of electric current at high current densities between said superconducting apparatus and a second apparatus through said electrically conductive means and said electrical conductive element.

7. The oxide superconducting apparatus of claim 5 wherein said high-T_c superconducting material is metal oxide.

8. The superconducting apparatus of claim 5 wherein said high-T_c superconducting material is one of rare-earth based, thallium-based, and bismuth-based.

9. The superconducting apparatus of claim 5 wherein said electrically conductive element is a noble metal.

10. The superconducting apparatus of claim 9 wherein said noble metal is one of gold and silver.

11. A superconducting apparatus, comprising:

a superconductor formed from high-T_c oxide superconducting material and having at least one surface in a substantially non-degraded state; and

an electrically conductive element formed from a noble metal with said element having fist and second surface portions with said first surface portion in contact with said superconductor surface to form a contact unit therewith and with said second surface portion adapted to be contactable with electrically conductive means to thereby establish an electrical connection to said electrically conductive element at said second surface portion, said thus formed electrically conductive element having been annealed with oxygen so that the contact resistivity between said superconductor surface and said first surface of said electrically conductive element including a range of between $<10\ 10^{-8}\Omega$-cm^2 and $10^{-10}\Omega$-cm^2.

12. The superconducting apparatus of claim 11 wherein said electrically conductive means contactable with said second surface portion of said electrically conductive element enables transmission of electric current at high current densities between said superconducting apparatus and a second apparatus through said electrically conductive means and said electrical conductive element.

13. The superconducting apparatus of claim 11 wherein said oxygen annealing of said electrically conductive element is carried out for a period not exceeding about one hour at temperature not exceeding about 700° C.

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