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Material Specific Design for Room Temperature Superconductivity[1] O-PAUL ISIKAKU-IRONKWE[2], The Center for Superconductivity Technologies, (TCST), Department of Physics, Michael Okpara University of Agriculture, Umudike, (MOUAU), Nigeria, UKO OFE, TCST @ MOUAU, CHIJIOKE ORIAKU, DAN ASIEGBU, TCST@MOUAU, EMEKA OGUZI, TCST and Department of Chemistry, FUTO, Owerri, Nigeria — The transition temperature, Tc, of superconductors has been increased sevenfold from 23K in Nb_3Ge to 164K in Hg-1223. A further two-fold increase would get us to above room temperature superconductivity. Studying high temperature superconductors (HTSCs), we have developed a formula that expresses Tc in terms of electronegativity, valence electrons, Ne, atomic number, Z, formula mass and a coupling constant, Ko. We observe an increasing linear relationship between Tc and Ko. Ko also correlates with formula mass and atomic number and the number of atoms in the compound. By our formula, Hg-1223 has Ko = 70. We propose, using our design algorithm, that room temperature superconductivity may be realized in a system with ko = 160; electronegativity = 2.5, Ne/Sqrt Z = 0.8. We proceed to show combinations of oxides and elements that will yield the required parameters for synthesizing reproducible room temperature superconductivity.

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