

The Design of High- T_c Superconductors – Room Temperature Superconductivity?

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Abstract – This year is the centennial of the discovery of superconductivity and the 25th anniversary of the discovery of high- T_c super-conductors (HTS). Though we still do not fully understand how HTS work, the basic rules of design can be determined from studying their systematics. We know what to do to increase T_c and, more importantly, what to do to increase critical current density J_c . This in turn lays down a challenge for the chemist. Can the ideal design be synthesized? More importantly, what are the limits? Can one make a room-temperature superconductor? In fact fluctuations place strict constraints on this objective and provide important guidelines for the design of the ideal superconductor.

Keywords – high-temperature superconductor, rare-earth cuprate, room-temperature superconductivity

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