

Conventional high temperature superconductivity: from A15 to MgB₂ to hydrides

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I will review, mostly for the benefits of the younger generation, the history of the half-century long quest for the room-temperature superconductivity, concentrating on the conventional electron-phonon mechanism. I will outline several stages, characterized by different paradigms, which can be tagged in a Potterian way thus:

- (1) A15 and the concept of an upper bound on T_c
- (2) V. L. Ginzburg and the concept of a negative dielectric function
- (3) MgB₂ and the concept of doped covalent bonds
- (4) H₃S and the room temperature superconductivity (if the room is in Antarctica)
- (5) LaH₁₀ and metallic hydrogen.