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The arrival of high temperature superconductors[1]

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The attainment of high temperature superconductivity has been considered a major advancement of modern science. It was the seminal discovery of the first cuprate high temperature superconductor, the Ba-doped La_2CuO_4, with a T_c of 35 K in 1986 by Alex Müller and George Bednorz of IBM Zurich Lab,[2] who were awarded the Nobel Prize in 1987, that ushered in the era of cuprate high temperature superconductivity. It was the first liquid nitrogen high temperature superconductor, $YBa_2Cu_3O_7$ with a T_c of 93 K discovered in 1987 by Paul C. W. Chu, Maw-Kuen Wu and colleagues in the respective groups at the University of Houston and the University of Alabama at Huntsville[3] that heralded the new era of high temperature superconductivity, drastically changing the psyche of superconductivity research and bringing superconductivity applications a giant step closer to reality. In the ensuing years, many high temperature superconductors have been found, leading to the current record T_c of 134 K which was observed by A. Schilling et al.[4] of ETH in 1993 in $HgBa_2Ca_2Cu_3O_{9-\delta}$ at ambient and later raised to 164 K under 30 GPa by L. Gao et al.[5] In the present talk, I shall briefly recall a few events leading to and during the arrival of high temperature superconductivity. The prospects for future superconductors with higher T_c will also be discussed.

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[5]L. Gao et al., Phys. Rev. B 50, 4260(R) (1994).