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Nature of high-temperature superconductivity JOHN D. DOW, Arizona State University, Tempe, AZ 85287-1504 USA, DALE R. HARSHMAN COLLABORATION[1] — Using muon spectroscopy, the high-temperature superconductivity of YBa(2)Cu(3)O(7) is shown to reside in its BaO layers, not in its cuprate planes. The symmetry of the hole-pairing is s-like, not d-like. The family of superconductors Pb(2)Sr(2)Y(1-x)R(x)Cu(3)O(8) can be doped p-type (with R=Ca) or n-type (with R=Ce or Am). The n-type versions do not superconduct, but the p-type compounds do superconduct. The doped ruthenate Ba(2)YRuO(6) begins superconducting in its BaO layers at 92 K. A successful theory of high-temperature superconductivity must explain the ruthenates, the superconducting organic compounds, and the superconducting cuprates. Presently none do.

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