

Abstract
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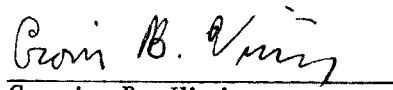
Suggested title of session
in which paper should be
placed.

Ternary Superconducting
Materials

Pressure Induced Re-entrant Superconductivity in
Antiferromagnetic $Tm_2Fe_3Si_5$. C. B. VINING, Ames Lab.-
USDOE* and Iowa State U. --Re-entrant superconductivity
is detected in well-characterized samples of $Tm_2Fe_3Si_5$ by
ac susceptibility measurements under applied pressure.
Above 2 kbar the upper superconducting transition tempera-
ture rapidly rises ($T_{C1}/dp = 0.47$ K/kbar) from 1.1 K
reaching a maximum of 3.1 K near 8.5 kbar and finally is
rapidly depressed ($dT_{C1}/dp = -0.17$ K/kbar) to below
1.3 K by 21 kbar. Superconductivity is destroyed by the
onset of antiferromagnetic order near $T_N = 1.1$ K for all
pressures. T_N is weakly enhanced by pressure (dT_N/dp
 $= 0.01$ K/kbar). Below 2 kbar and above 21 kbar of applied
pressure bulk superconductivity is not observed. The
pressure dependence of T_{C1} is described quantitatively
by a pressure dependent pairbreaking parameter arising
from the interaction between conduction electrons and a
local spin with a coupling constant J . $T_{Cmax} - T_{C1}$ is
proportional to J^2 with $J = J_0 - J_1$ where J_0 and J_1 are
the direct and exchange integrals, which results in a
maximum in T_C where $J_0 = J_1$.

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- Prefer Poster Session
 Prefer Standard Session
 No preference


Cronin B. Vining
Ames Laboratory
Iowa State University,
Ames, Iowa 50011