

on gepulster Argon-Entladungen

gereinigten Argon (Verunreinigungen
h 2–100 Torr ergab sich eine Druck-
ten, die etwa proportional zu p^{-1}

skussion

r II-Linien ist aus der Vorstellung zu
tladungslawine gebildete Ionenwolke
t, daß keine Elektronenstoßanregung
ngigkeit ist nicht zu erwarten.

Banden müssen dagegen durch einen
mmen. Die Tatsache, daß sie um so
er das Gas ist, spricht für einen Ur-
. Als Energiespeicher kommen lang-
rgons in Betracht. Die Lebensdauer
ände des Ar bei 0,6 Torr ist nach
; beim Zerfall entsteht jedoch keine

onatom vor seinem Zerfall mit einem
chselwirkt und kurzzeitig ein ange-
nte ein Molekül-Emissionsspektrum
lekülzustände haben im allgemeinen
zeitliche Verlauf des Nachleuchtens
ndern die Entstehung der Moleküle

Meßdaten kann der Bildungsprozeß
och nicht ermittelt werden. Weitere
em Ziel, die Bandenstrukturen besser
der Lichtentstehung aufzuklären.

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Superconductivity in α - and ω -Zirconium Under High Pressure

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The pressure dependence of the superconducting transition temperature $T_c(p)$ of α -Zr has been investigated in both solid and liquid pressure transmitting media. Up to about 45 kbar dT_c/dp was measured to be $+3.5 \times 10^{-6}$ K/bar. Cold working at 4.2 K produced a strong irreversible effect on T_c .

The superconductivity of the high pressure phase, ω -Zr, has been studied in its region of stability, i.e. above 60 kbar. For ω -Zr, $dT_c/dp = +7.7 \times 10^{-6}$ K/bar, and $T_c(0) = 0.72$ K (by extrapolation).

Introduction

The pressure dependence of the superconducting transition temperature T_c in non-transition metals can satisfactorily be explained within the framework of McMillan's theory¹ by the shift in phonon frequencies with pressure². For transition metals, such a comprehensive description has not yet been found. It has been suggested³ that dT_c/dp is governed by the shape of the d -band, expressed by the quantity dN/dn (N = electron density of states at the Fermi surface; n = number of valence electrons per atom). On this assumption the different signs of dT_c/dp in transition metals are easily understood. The connection between $T_c(p)$ and the shape of the d -band has been supported experimentally by measurements in the alloy series Zr-Nb-Mo⁴, where the rigid band model is valid. It was suggested that application of pressure, i.e. reduction of volume, effects T_c in the same way as filling the conduction band by adding atoms of higher valency.

Since the investigations of Zr-Nb-Mo binary alloys were confined to the cubic (bcc) part of the series, the question remained whether the hexagonal part also exhibited some correlation between the effects of pressure and valence number. The investigation into the hcp region was begun with measurements on pure zirconium in order to compare

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