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Subvolume B 6α

Pnictides and chalcogenides III

(Actinide monpnictides)

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*The significant impact on the understanding of the complex nature of the magnetism of actinide monocompounds brought about by J. Rossat-Mignod and G.H. Lander is highly acknowledged by the author.*

## Preface

The Landolt-Börnstein Volume 27 deals with the magnetic properties of non-metallic inorganic compounds based on transition elements, such as there are pnictides, chalcogenides, oxides, halides, borates, silicates and phosphates. A survey of the contents of all subvolumes that have already appeared or have been planned to appear is printed on the inside of the front cover.

In order to cover the large amount of magnetic and magnetically related properties of the lanthanide and actinide pnictides and chalcogenides that appeared in literature in recent years, the subvolume 27B had to be split into subvolumes B1...B8. Subvolumes 27B1, 27B2, 27B3, 27B4 and 27B5 (published between 1998 and 2003) deal with lanthanide pnictides and chalcogenides. The three subvolumes 27B6, 27B7 and 27B8 cover the properties of actinide pnictides and chalcogenides. Subvolume 27B8 (published in 2004) deals with ternary actinide pnictides and chalcogenides, while in subvolume 27B7 (published in 2005) data on binary non-equiatomic actinide pnictides and chalcogenides are given. Subvolume 27B6 is split in two parts. Part  $\alpha$  (present subvolume) deals with actinide mononpnictides together with isostructural monocompounds containing the element carbon, as well as mutual solid solutions with either cation or anion mixing. The second part  $\beta$  will inform about the actinide monochalcogenides together with solid solutions between actinide elements and between elements within the Vth group or of the Vth and VIth group of the Periodic System.

Pnictides are defined as compounds containing at least one of the elements P, As, Sb or Bi (V-th group of the Periodic System) and chalcogenides are defined as compounds containing one of the elements S, Se or Te (VI-th group of the periodic system).

An index of substances at the end of this subvolume lists all actinide mononpnictides treated in this subvolume and will help the user to identify quickly the information on the individual substances he is looking for.

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Aachen, June 2005

**The Editor**

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## Definitions, units and conversion factors

In the SI, units are given for both defining relations of the magnetization,  $\mathbf{B} = \mu_0(\mathbf{H} + \mathbf{M})$  and  $\mathbf{B} = \mu_0\mathbf{H} + \mathbf{M}$ , respectively.  $\mu_0 = 4\pi \cdot 10^{-7} \text{ Vs A}^{-1} \text{ m}^{-1}$ ,  $A$ : molar mass,  $\rho$ : mass density,  $\mathbf{P}$ : magnetic moment,  $\mathbf{M}$ : magnetic moment per unit volume (magnetization, magnetic polarization).

Quantity	cgs/emu	SI	
$\mathbf{B}$	$\text{G} = (\text{erg cm}^{-3})^{1/2}$ $1 \text{ G} \hat{=}$	$\text{T} = \text{Vs m}^{-2}$ $10^{-4} \text{ T}$	
$\mathbf{H}$	$1 \text{ Oe} = (\text{erg cm}^{-3})^{1/2}$ $1 \text{ Oe} \hat{=}$	$\text{A m}^{-1}$ $10^3/4\pi \text{ A m}^{-1}$	
$\mathbf{M}$	$\mathbf{B} = \mathbf{H} + 4\pi\mathbf{M}$ $\text{G}$ $1 \text{ G} \hat{=}$	$\mathbf{B} = \mu_0(\mathbf{H} + \mathbf{M})$ $\text{A m}^{-1}$ $10^3 \text{ A m}^{-1}$	$\mathbf{B} = \mu_0 \mathbf{H} + \mathbf{M}$ $\text{T}$ $4\pi \cdot 10^{-4} \text{ T}$
$\mathbf{P}$	$\mathbf{P} = \mathbf{MV}$ $\text{G cm}^3$ $1 \text{ G cm}^3 \hat{=}$	$\mathbf{P} = \mathbf{MV}$ $\text{A m}^2$ $10^{-3} \text{ A m}^2$	$\mathbf{P} = \mathbf{MV}$ $\text{V s m}$ $4\pi \cdot 10^{-10} \text{ V s m}$
$\sigma$	$\sigma = \mathbf{M}/\rho$ $\text{G cm}^3 \text{ g}^{-1}$ $1 \text{ G cm}^3 \text{ g}^{-1} \hat{=}$	$\sigma = \mathbf{M}/\rho$ $\text{A m}^2 \text{ kg}^{-1}$ $1 \text{ A m}^2 \text{ kg}^{-1}$	$\sigma = \mathbf{M}/\rho$ $\text{V s m kg}^{-1}$ $4\pi \cdot 10^{-7} \text{ V s m kg}^{-1}$
$\sigma_m$	$\sigma_m = \sigma A$ $\text{G cm}^3 \text{ mol}^{-1}$ $1 \text{ G cm}^3 \text{ mol}^{-1} \hat{=}$	$\sigma_m = \sigma A$ $\text{A m}^2 \text{ mol}^{-1}$ $10^{-3} \text{ A m}^2 \text{ mol}^{-1}$	$\sigma_m = \sigma A$ $\text{V s m mol}^{-1}$ $4\pi \cdot 10^{-10} \text{ V s m mol}^{-1}$
$\chi$	$\mathbf{P} = \chi\mathbf{H}$ $\text{cm}^3$ $1 \text{ cm}^3 \hat{=}$	$\mathbf{P} = \chi\mathbf{H}$ $\text{m}^3$ $4\pi \cdot 10^{-6} \text{ m}^3$	$\mathbf{P} = \chi\mu_0\mathbf{H}$ $\text{m}^3$ $4\pi \cdot 10^{-6} \text{ m}^3$
$\chi_v$	$\chi_v = \chi/V$ $\text{cm}^3 \text{ cm}^{-3}$ $1 \text{ cm}^3 \text{ cm}^{-3} \hat{=}$	$\chi_v = \chi/V$ $\text{m}^3 \text{ m}^{-3}$ $4\pi \text{ m}^3 \text{ m}^{-3}$	$\chi_v = \chi/V$ $\text{m}^3 \text{ m}^{-3}$ $4\pi \text{ m}^3 \text{ m}^{-3}$
$\chi_g$	$\chi_g = \chi_v/\rho$ $\text{cm}^3 \text{ g}^{-1}$ $1 \text{ cm}^3 \text{ g}^{-1} \hat{=}$	$\chi_g = \chi_v/\rho$ $\text{m}^3 \text{ kg}^{-1}$ $4\pi \cdot 10^{-3} \text{ m}^3 \text{ kg}^{-1}$	$\chi_g = \chi_v/\rho$ $\text{m}^3 \text{ kg}^{-1}$ $4\pi \cdot 10^{-3} \text{ m}^3 \text{ kg}^{-1}$
$\chi_m$	$\chi_m = \chi_g A$ $\text{cm}^3 \text{ mol}^{-1}$ $1 \text{ cm}^3 \text{ mol}^{-1} \hat{=}$	$\chi_m = \chi_g A$ $\text{m}^3 \text{ mol}^{-1}$ $4\pi \cdot 10^{-6} \text{ m}^3 \text{ mol}^{-1}$	$\chi_m = \chi_g A$ $\text{m}^3 \text{ mol}^{-1}$ $4\pi \cdot 10^{-6} \text{ m}^3 \text{ mol}^{-1}$

### Experimental errors

In this volume, experimental errors are given in parentheses referring to the last decimal places. For example, 1.352(12) stands for  $1.352 \pm 0.012$ , and 342.5(21) stands for  $342.5 \pm 2.1$ .