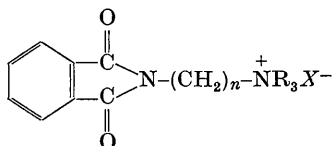


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Unit cells and space groups of a series of N-(ω -dimethylaminoalkyl)-phthalimide methiodides.* By JAMES E. WEIDENBORNER† and L. EDWARD GODYCKI‡, *Chemistry Department, St. Louis University, St. Louis, Missouri, U.S.A.*

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Pharmacologic tests have shown that the curare-like activity of a series of monoquaternary N-(ω -dialkylaminoalkyl)-phthalimides of general formula,



is a function of the methylene chain length. Paralyzing activity rises as n increases, reaches a maximum at $n=7, 8,$ and $9,$ then drops off as the chain length is further increased.

In an attempt to establish the structure-activity relationship, three compounds in a series of N-(ω -dimethylaminoalkyl)-phthalimide methiodides with $n=6, 10$ and 11 were selected for X-ray diffraction studies. Crystals prepared by recrystallization from isopropyl alcohol were obtained from Seiwald (1954) of this laboratory. Examination under a microscope showed the crystals to have the shape of elongated and flattened parallelepipeds with six well-developed faces parallel to the (100), (010), and (001) planes.

The Weissenberg technique and, to a lesser extent,

* Based on a thesis submitted by James E. Weidenborner to St. Louis University in partial fulfillment of the requirements for the degree of Master of Science.

† Present address: Research Center, International Business Machines Corporation, Yorktown Heights, New York, U.S.A.

‡ Present address: Electro-Optical Systems Inc., Pasadena, California, U.S.A.

Table 1. *Crystallographic data for N-(ω -dimethylaminoalkyl)-phthalimide methiodides*

Crystal data	Chain length		
	6	10	11
a (Å)	19.62 ∓ 0.06	31.6 ∓ 0.1	33.9 ∓ 0.1
b (Å)	10.27 ∓ 0.04	7.55 ∓ 0.03	9.52 ∓ 0.03
c (Å)	9.86 ∓ 0.03	9.67 ∓ 0.03	7.55 ∓ 0.03
α (°)	106.9 ∓ 0.5	90	90
β (°)	94.1 ∓ 0.5	92.6 ∓ 0.4	90
γ (°)	96.3 ∓ 0.5	90	90
D_m (g.cm. ⁻³)*	1.46 ∓ 0.01	1.35 ∓ 0.01	1.32 ∓ 0.01
D_x (g.cm. ⁻³)†	1.47 ∓ 0.01	1.36 ∓ 0.01	1.326 ∓ 0.01
Diffraction symbol	$\bar{1}P-$	$2/mC$	$mmmPn$
Probable space group	$P\bar{1}$	$C2$	$Pmn2_1$

* Determined by flotation.

† Based on four formula weights per unit cell.

the oscillation method were used to obtain the diffraction photographs. Unit cell dimensions were measured from oscillation photographs and zero-level Weissenberg photographs, using Mo $K\alpha$ and Cu $K\alpha$ radiation. Diffraction symbols were obtained from the level symmetries of the Weissenberg photographs and the observed systematic extinctions. Probable space groups were deduced by a study of molecular models. The results are given in Table 1.

Reference

SEIWALD, R. J. (1954). Ph.D. Dissertation, St. Louis University, St. Louis.

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The crystal structure of iridiohexacyanides of divalent cations. By ADOLFO FERRARI, MARIA ELEONORA TANI and EMANUELE MORISI, *Institute of Chemistry, University of Parma, Italy*

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The crystalline structures of the iridiohexacyanides of divalent cations having the formula $Me_2^{II}[\text{Ir}(\text{CN})_6]_2 \cdot 12\text{H}_2\text{O}$, where $Me^{II} = \text{Cr}, \text{Mn}, \text{Fe}, \text{Co}, \text{Ni}, \text{Cu}, \text{Zn}, \text{Cd}$ have been determined. Cu $K\alpha$ radiation was used ($\lambda = 1.5418 \text{ \AA}$).

The compounds were prepared for the first time in this Institute. They are isotopic with the salts of the correspondent series of ferrihexacyanides, cobaltihexacyanides (Ferrari, Tani & Magnano, 1959) and rhodihexacyanides.

The probable space groups are: $O_h(5)-Fm\bar{3}m$ and $T_d(2)-F\bar{4}3m$. The unit cell containing two molecules has the following constants:

$\text{Cr}_3[\text{Ir}(\text{CN})_6]_2 \cdot 12\text{H}_2\text{O}$	$a = 10.452 \pm 0.02 \text{ \AA}$	$d_c = 3.113 \text{ g.cm.}^{-3}$
$\text{Mn}_3[\text{Ir}(\text{CN})_6]_2 \cdot 12\text{H}_2\text{O}$	$a = 10.708 \pm 0.02$	$d_c = 2.907$
$\text{Fe}_3[\text{Ir}(\text{CN})_6]_2 \cdot 12\text{H}_2\text{O}$	$a = 10.593 \pm 0.02$	$d_c = 3.023$
$\text{Co}_3[\text{Ir}(\text{CN})_6]_2 \cdot 12\text{H}_2\text{O}$	$a = 10.540 \pm 0.03$	$d_c = 3.094$
$\text{Ni}_3[\text{Ir}(\text{CN})_6]_2 \cdot 12\text{H}_2\text{O}$	$a = 10.361 \pm 0.01$	$d_c = 3.255$
$\text{Cu}_3[\text{Ir}(\text{CN})_6]_2 \cdot 12\text{H}_2\text{O}$	$a = 10.298 \pm 0.02$	$d_c = 3.362$
$\text{Zn}_3[\text{Ir}(\text{CN})_6]_2 \cdot 12\text{H}_2\text{O}$	$a = 10.483 \pm 0.02$	$d_c = 3.207$
$\text{Cd}_3[\text{Ir}(\text{CN})_6]_2 \cdot 12\text{H}_2\text{O}$	$a = 10.878 \pm 0.01$	$d_c = 3.229$

The water contained is of zeolitic nature because it can be eliminated without any change in the lattice.

Reference

FERRARI, A., TANI, M. E. & MAGNANO, G. (1959). *Gazz. Chim. Ital.* **89**, 2512.