

point of the mountain slope, we started from, moves at not too small distances, apart from the fact that the slope recession proceeds either in a parallel or non-parallel manner. In our theory indirect slope transformation takes place for positive and small negative values of c .

In fig. 4, reproduced from VON ENGELN's Geomorphology (11, p. 292) we see RICHTER's denudation slope on outliers in the Monument Valley in Arizona. Fig. 5, taken from HOLMES' Physical Geology (12, plate 64B) shows the same phenomenon among the well-known totem-poles. Both the permeability of the horizontal stratified sandstones and the proximity of canyons with nearly perpendicular slopes and also the fact that, in spite of a considerable difference in breadth of the buttes in fig. 4 and 5, the perpendicularity of the cliffs has approximately been preserved, are an indication, that in this case we have to do with parallel recession. It means that here RICHTER's denudation slopes are therefore examples of indirect slope transformation.

In order to gain a fuller understanding of the properties of our formula (14a) the way in which the shape of the curves change when c , α and β alter, respectively, and the other factors remain constant, will be investigated in the second part of our theory.

Crystallography. — *Crystal description of 1-methylamino-2:4-dinitronaphthalene, $C_{10}H_5(NO_2)_2NH \cdot CH_3$.* By L. P. G. KONING.
(Communicated by Prof. H. A. BROUWER.)

(Communicated at the meeting of September 27, 1947.)

The organic compound 1-methylamino-2:4-dinitronaphthalene, $C_{10}H_5(NO_2)_2NH \cdot CH_3$, has been prepared by H. W. TALEN¹⁾. Prof. Dr P. TERPSTRA of the Crystallographic Institute of the University of Groningen has been so kind to put the crystals at my disposal for crystallographic investigation with the two-circle goniometer. The results of this investigation will be given here.

The orange-coloured crystals with a size of 0.1—1.0 mm are short prismatic parallel to the c -axis.

Triclinic pinacoidal.

Forms: $c(001)$, $b(010)$, $a(100)$, $m(110)$, $r(101)$, $q(011)$, $o(111)$, $t(121)$, $i(\bar{1}01)$, $v(\bar{1}\bar{2}1)$, $\sigma(\bar{4}34)$, $\tau(\bar{4}31)$, $\pi(\bar{5}41)$.

Face	Symbol	φ	ϱ	
1	c	(001)	86° 08'	46° 23'
2	b	(010)	0	90
3	a	(100)	98 51	90
4	m	(110)	57 25	90
5	r	(101)	91 55	61 30
6	q	(011)	55 08	51 39
7	o	(111)	72 28	62 40
8	t	(121)	56 21	65 39
9	i	($\bar{1}01$)	47 41	16 55
10	v	($\bar{1}\bar{2}1$)	126 12	66 16
11	σ	($\bar{4}34$)	18 29	35 19
12	τ	($\bar{4}31$)	238 21	68 42
13	π	($\bar{5}41$)	238 06	74 36

¹⁾ H. W. TALEN, Replacement of the halogen atom or the alkyl group in 1-chloro-, 1-methoxy-, or 1-ethoxy-2:4-dinitro- and 2:4:5-trinitronaphthalenes by various other groups, Rec. d. Trav. Chim. d. Pays-Bas, T. 47, no. 2, 346—362 (1928).

$X'_0 = 1.0515$	$\varrho_0 = 46^\circ 30'$	$p'_0 = 0.7955$
$Y'_0 = 0.3461$	$\varphi_0 = 86^\circ 14'$	$q'_0 = 0.6388$
$\alpha = 100^\circ 11'$	$\lambda = 87^\circ 16'$	$a = 1.130$
$\beta = 136^\circ 26'$	$\mu = 44^\circ 58'$	$b = 1$
$\gamma = 105^\circ 37'$	$\nu = 99^\circ 03'$	$c = 0.6206$
	$d = 48^\circ 47'$	
	$f = 28^\circ 23'$	

Optical properties:

Biaxial positive, $2V$ large; birefringence very large, dispersion $v > r$ strong. Optical ax. plane about parallel $a(100)$.

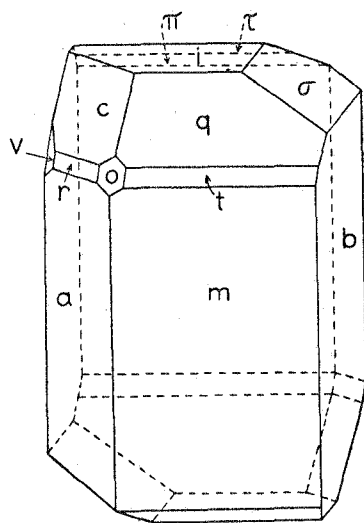


Fig. 1.

Pleochroism strong: $n_\alpha =$ brownish yellow, $n_\beta = n_\gamma =$ greenish yellow. According to BARKER's²⁾ systematic classification of crystals the following characteristic angles have been calculated:

$cr = 15^\circ 46'$	$am = 41^\circ 26'$	$bq = 63^\circ 38'$
$ra = 29^\circ 12'$	$mb = 57^\circ 25'$	$qc = 23^\circ 37'$

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²⁾ T. V. BARKER, Systematic crystallography, an essay on crystal description, classification and identification, London (1930). — P. TERPSTRA, Kristallogrometrie, Groningen (1946).

Crystallography. — Crystal description of 1-*n*-propylamino-2:4-dinitronaphthalene $C_{10}H_5(NO_2)_2NH \cdot C_3H_7(n)$. By L. P. G. KONING. (Communicated by Prof. H. A. BROUWER.)

(Communicated at the meeting of September 27, 1947.)

The organic compound 1-*n*-propylamino-2:4-dinitronaphthalene, $C_{10}H_5(NO_2)_2NH \cdot C_3H_7(n)$, has been prepared by H. W. TALEN¹⁾. The crystals kindly put at my disposal by Prof. Dr P. TERPSTRA of the Crystallographic Institute of the University of Groningen have been subjected to crystallographic measurements with the two-circle goniometer, the results of which will be given here.

The orange-coloured crystals with a size of 0.1—1.0 mm are prismatic parallel to the *c*-axis and flattened parallel to $b(010)$.

Cleavage: $c(001)$ and $a(100)$ good.

Triclinic pinacoidal.

Forms: $c(001)$, $b(010)$, $a(100)$, $m(110)$, $p(310)$, $n(\bar{3}10)$, $q(011)$, $t(0\bar{1}1)$.

Face	Symbol	φ	e
1	$c(001)$	$108^\circ 12'$	$14^\circ 40'$
2	$b(010)$	0	90
3	$a(100)$	$80^\circ 48'$	90
4	$m(110)$	$25^\circ 38'$	90
5	$p(310)$	$51^\circ 18'$	90
6	$n(\bar{3}10)$	$295^\circ 32'$	90
7	$q(011)$	$16^\circ 11'$	$41^\circ 28'$
8	$t(0\bar{1}1)$	$166^\circ 08'$	$46^\circ 06'$

$X'_0 = 0.2481$	$\varrho_0 = 14^\circ 37'$	$p'_0 = 0.4904$
$Y'_0 = 0.0805$	$\varphi_0 = 107^\circ 59'$	$q'_0 = 0.9290$
$\alpha = 83^\circ 14'$	$\lambda = 94^\circ 28'$	$a = 1.9354$
$\beta = 103^\circ 56'$	$\mu = 77^\circ 02'$	$b = 1$
$\gamma = 100^\circ 32'$	$\nu = 80^\circ 48'$	$c = 0.9103$
	$d = 51^\circ 25'$	
	$f = 53^\circ 46'$	

As is shown in the figures this compound occurs also twinned.

Optical properties:

Biaxial positive, $2V$ moderate. Birefringence very strong; Dispersion strong: $v > r$. Optical ax. plane nearly $\perp a(100)$. $n_\beta \wedge c = 7^\circ$.

¹⁾ H. W. TALEN, Replacement of the halogen atom or the alkyl group in 1-chloro-, 1-methoxy- or 1-ethoxy-2:4-dinitro- and 2:4:5-trinitronaphthalenes by various other groups, Rec. d. Trav. Chim. d. Pays-Bas, T. 47, no. 2, 346—362 (1928).