

A mixture of 10,0 % *p-Nitro*- and 90,0 % of *p-Nitroso*-derivative commences to solidify at 80°,8 and completely solidifies at 80°,6.

A mixture of 0 % of *p-Nitro*- and 100 % of *p-Nitroso*-derivative melted at 82°,2.

The composition is given in molecule-percents.

In fig. 6 the course of the melting curve is represented graphically and the double line for the initial and final solidifying points is shown. It will be seen that the character of the line points to a continuous series of mixed crystals; the average temperature-interval between initial and final solidification amounts to about 0°,3.

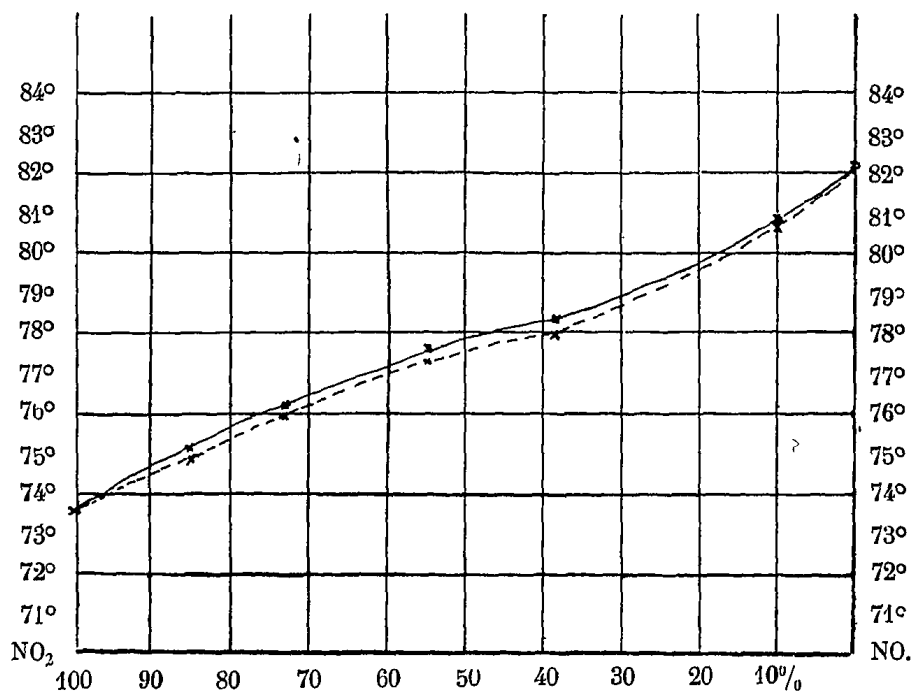


Fig. 6.

The result of the research reveals the complete isomorphy of *p-Nitro-diethylaniline* and *p-Nitroso-diethylaniline* and also their complete miscibility in the solid state.

**Chemistry.** — “*On Orthonitrobenzyltoluidine*”. By Dr. F. M. JAEGER.  
(Communicated by Prof. A. F. HOLLEMAN).

(Communicated in the meeting of March 25, 1905).

Some time ago the *o-Nitrobenzyl* derivate of *para-toluidine*, (melting point 72° C.) was investigated by NORDENSKJOLD, who described it as being *tetragonal* with the parameter-relation  $a:c = 1:0,6230$ ; the compound exhibits only one combination-form, namely {111} and is optically monaxial: positive. (Bull. Geol. Instit. Upsala, (1892), 84, also Ref. Zeits. f Kryst. **24**, 147).

For comparison I have investigated the *o*-Nitrobenzyl-derivative of *orthotoluidine* <sup>1)</sup>.

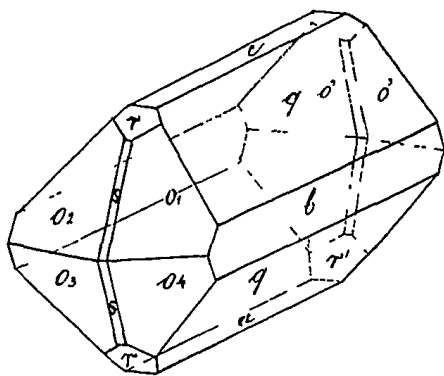
Recrystallised from acetone in which the compound (m. p. 96°) is very soluble, the substance forms very large, transparent, pale yellow or rather pale greenish-yellow crystals possessing a strong lustre and assuming a more brownish tinge on prolonged exposure to the air. Elongated, prismatic needles are also occasionally obtained.

The first-named crystals are nearly isometrically developed and possess many combination forms, they admitted very well of accurate measurements.

*Rhombic-bipyramidal*

The parameters are.

$$a . b . c = 0,8552 , 1 . 0,6138.$$



*o*-Nitro Benzyl *o*-Toluidine.

Forms observed:  $q = \{021\}$ , strongly predominating and lustrous;  $o = \{211\}$ , broadly developed and yielding sharp reflexes;  $r = \{101\}$ , well formed and lustrous;  $c = \{001\}$ , narrower but well reflecting,  $b = \{010\}$ , dull sometimes present with only a single plane; mostly a little broader than  $c$ , but also somewhat smaller;  $s = \{201\}$ , narrow and unsuitable

for measurement; the symbol has been deduced from the zone-relation.

The habitus is mostly thick-prismatic along the  $a$ -axis, particularly the smaller crystals possess a very regular form.

*Measured:*      *Calculated:*

$c : q = (001) : (021) = 50^{\circ} 50'$	—
$c : r = (001) : (101) = 35 40$	—
$b \cdot q = (010) : (021) = 39 9$	39° 10'
$o : r = (211) : (101) = 27 20$	27 10
$o \cdot o = (211) : (2\bar{1}\bar{1}) = 65 8$	65 18
$o : c = (211) : (001) = 57 26$	57 21
$o : o = (211) : (2\bar{1}\bar{1}) = 38 46$	38 40
$q : o = (021) : (211) = 53 16\frac{1}{2}$	53 18
$q : r = (021) : (101) = 59 1'$	59 8'
$b : o = (010) : (211) = 70 38$	70 40

Completely cleavable parallel  $\{021\}$ , distinctly towards  $\{211\}$ .

<sup>1)</sup> Ber. d. d. Chem. Ges. 25. 3582.

In oil of cloves as immersion liquid the situation of the elasticity directions on the planes of {010}, {021} and {001} orientated normally in regard of the  $\alpha$ -axis. The optical axial plane is {100}; the first diagonal stands perpendicularly on {010}. On the planes of {021} a brightly coloured interferential image is visible in convergent polarised light; extraordinarily strong dispersion of a rhombic character with  $\rho > v$  around the first bissectrix. In oil of cloves the apparent axial angle amounts to about  $49^\circ$  for the red and  $46^\circ$  for the green rays.

The oil caused on {021} little solution-figures, which had the form of isosceles trapezia; they agree with the indicated symmetry of the crystals.

The specific gravity is 1,278, at  $15^\circ$ , the equivalent-volume is 189,28, and the topical axes are:

$$\chi : \psi : \omega = 6,0875 : 7,1175 ; 4,3688$$

Although differing from NORDENSKJÖLD's *para*-derivative in symmetry, the analogy of the two isomers is still distinctly recognisable in the value of the relation  $b : c$ .

*o*-Nitrobenzyl-*para*-Toluidine:  $a : b : c = 1,000 : 1 : 0,6230$ .

*o*-Nitrobenzyl-*ortho*-Toluidine:  $a : b : c = 0,8552 : 1 : 0,6138$ .

The difference in position of the methyl- and amino-group with regard to each other therefore causes chiefly only a variation of the crystal parameters in one direction.

**Chemistry.** — “*On position-isomeric Dichloronitrobenzenes.*” By Dr. F. M. JAEGER. (Communicated by Prof. A. F. HOLLEMAN).

(Communicated in the meeting of March 25, 1905).

Of the six theoretically-possible dichloronitrobenzenes, which I received some time ago for investigation from Prof. HOLLEMAN, I succeeded in obtaining four in such a measurable form that their crystallographical determination could be satisfactorily undertaken.

Notwithstanding the great power of crystallisation of most of them, the preparation of properly developed crystals is a troublesome and very tedious matter. This is partly due to the very great solubility in most of the organic solvents, which in connection with the low melting points of these compounds often causes a not inconsiderable supersaturation. During the spontaneous crystallisation, which then takes place, no well-formed individuals, but crystal-aggregates are formed, which are difficult of investigation. In addition, the peculiar softness of the crystals causes most of them to exhibit curved planes and considerable geometrical deviations. Again, owing to the heat