

protein binding dye. Coomassie blue and procion blue, suggested by some authors⁵ for protein staining, are not suitable in this procedure, because they are alkali labile. To review some other methods used for protein estimation in gels, densitometry⁶ is only semiquantitative, and the use of continuously labelled proteins⁷ is expensive and in many *in vitro* experiments impossible.

Reproducibility of the procedure. In Fig. 3 a and b rat brain insoluble proteins are analyzed 10, 40, and 150 min after the injection of ³H-leucine into a lateral ventricle. In all cases the standard errors are smaller than 10% (N=3-5). Similar techniques introduced by other workers⁸⁻¹¹ have, in our opinion several shortcomings, and the authors did not demonstrate the reliability of their results by statistical treatment.

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A Ti₃O₅ Modification of V₃O₅-type Structure

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This note will report briefly on a new modification of Ti₃O₅, studied at the above Institutes.

One of us (G. Å.) has made systematic preparative studies by heating appropriate amounts of TiO₂ and Ti₂O₃ (both about 99.97% pure) in sealed, evacuated silica tubes at different temperatures for varying periods of time. The tubes were quenched in water and the preparations characterized by their X-ray patterns taken at room temperature.

A phase giving a powder pattern previously not encountered for Ti₃O₅ was found in samples heated at temperatures within the range 600–925°C. Single-phase specimens were obtained at high temperatures, 900–925°C, after long heating (more than a month). Samples held at higher temperatures gave the pattern of a Ti₃O₅ modification (β -Ti₃O₅) previously shown by two of us to be formed by a rapid transformation from a high-temperature modification of Ti₃O₅ of pseudo-brookite structure (α -Ti₃O₅).¹ The latter phase is evidently the one which forms at temperatures exceeding about 950°C.

It was possible to index the powder pattern of the new phase (γ -Ti₃O₅) from its similarity to that of V₃O₅ (*cf.* Table 1). The following dimensions were derived for the unit cell chosen to conform with the orientation previously used for V₃O₅.^{2,3}

The data given here for V₃O₅ were obtained by S. Å., who also performed a refinement of the structure of this substance. An account of the results, based on 633 independent reflections (diffractometer data) and carried to a conventional *R* value of 2.9%, will shortly appear elsewhere.

Independent preparative and X-ray studies conducted by H. O. have given results in agreement with those described above. It was found that α -Ti₃O₅ once formed did not transform into γ -Ti₃O₅ even

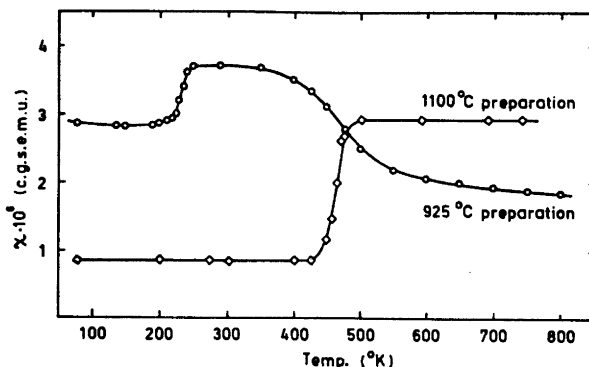


Fig. 1. Magnetic susceptibility of Ti_3O_5 .

Table 1. X-Ray powder data for $\gamma\text{-Ti}_3\text{O}_5$. $\text{CuK}\alpha_1$ -radiation ($\lambda=1.54060$ Å). Internal standard: KCl ($a=6.2930$ Å, 25°C)⁸.

hkl	$10^5 \times \sin^2\theta$ obs.	$10^5 \times \sin^2\theta$ calc.	I_{obs}
2 0 $\bar{2}$	2696	2697	m
1 1 $\bar{1}$	2976	2979	w
2 0 0	5207	5205	st
0 0 2	5370	5363	vw
1 1 1	6908	6914	st
3 1 $\bar{3}$	8380	8373	st
0 2 0	9224	9218	m
1 1 $\bar{3}$	9775	9769	st
3 1 $\bar{4}$	11856	11855	m
1 1 2	12903	12904	m
2 2 0	14421	14423	m
5 1 $\bar{5}$	19174	19162	m
4 2 $\bar{2}$	19674	19660	st
3 1 1	21265	21259	st
4 0 $\bar{6}$	21873	21862	m
1 3 1	25348	25350	vw
3 3 $\bar{3}$	26810	26810	m
1 3 $\bar{3}$	28218	28206	st
7 1 $\bar{5}$	30712	30715	w
4 2 $\bar{6}$	31070	31080	w

	Ti_3O_5	V_3O_5
a	10.120 (2) Å	10.005 (1) Å
b	5.074 (1) Å	5.0416 (5) Å
c	9.970 (2) Å	9.859 (1) Å
β	138.15 (1) $^\circ$	138.80 (1) $^\circ$

upon prolonged heating below 950°C . This has been confirmed by G. Å. Results of measurements of magnetic susceptibility performed by H. O. are illustrated in Fig. 1. A magnetic transition point of the sample

prepared at 925°C is seen at about 250 K and a broad tailing of the susceptibility curve extends from 350 K. A discussion of these data will be published elsewhere. Here it will also be pointed out that the magnetic transition temperature now observed for α - to β - Ti_3O_5 (about 460 K) is in agreement with findings by several recent investigators⁴⁻⁷ and thus differs from the value (~ 395 K) previously obtained by two of us from X-ray investigations.¹ Current studies in Stockholm on the relations among the different modifications include investigations of the influence of various kinds of low concentrations of substituents.

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