Spitzenelektroden keineswegs zu empfehlen – sie dienten hier nur zur Demonstration der Methode.

Beckey [4] entwickelte Ionenquellen mit Drahtemittern, die sich durch eine um den Faktor 100 höhere Konstanz auszeichnen. Mit diesen Ionenquellen ließe sich eine Genauigkeit von 0,2 – 0,3% bei der Bestimmung des H/D-Verhältnisses erreichen. Bei der Untersuchung von Proben mit nahezu natürlichem H-D-Gehalt wirkt sich die endliche Nachweisgrenze des Spektrometers auf die Genauigkeit des Analysenergebnisses aus. Beispielsweise beträgt bei Verwendung eines Drahtemitters für $m/n = 10^3$ und eine Nachweisgrenze von $1 : 10^6$ der Fehler etwa 0,7%.

[4] H. D. Beckey, Z. Instrumentenk. **71**, 51 [1963].

Wir danken Herrn Prof. Dr. R. Brill für die Förderung der Arbeit.

Fluorescence Spectrum of Terbium Phthalate

S. P. Sinha

Cyanamid European Research Institute
Cologny (Geneva), Switzerland

(Z. Naturforschg. **20 a**, 319 [1965]; eingegangen am 16. Januar 1965)

Earlier we have described [1] the fluorescence spectra of europium phthalate and naphthalate along with the dipyridyl complexes of samarium, europium, gadolinium, terbium, and dysprosium excited by the intramolecular energy transfer from the ligand to the metal ions. The data on terbium phthalate and naphthalate were lacking in that paper. In the meantime we have obtained these data. Unfortunately, under the same experimental conditions terbium naphthalate does not show any fluorescence in contrast to the increase in relative intensities of the $^5D_0 \rightarrow {}^7F_2$ and $^5D_0 \rightarrow {}^7F_1$ transitions in europium naphthalate [1, 2]. An explanation to account for this fact is that possibly the donor triplet level lies below the acceptor level of the terbium naphthalate chelate. However, the characteristic green fluorescence was observed in the terbium phthalate complex.

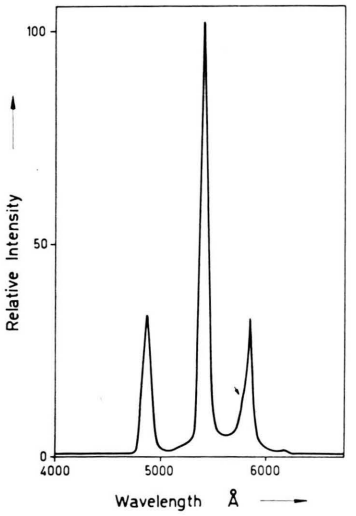

Fig. 1. Fluorescence spectrum of terbium phthalate at room temperature. The arrow shows the position of the shoulder at 5800 Å.

The fluorescence spectrum of terbium phthalate was obtained by exciting the complex in the solid state by monochromatic radiation of 292 mμ corresponding to the highest peak in the excitation spectrum. Fig. 1 presents the fluorescence spectrum as obtained with an Aminco recording spectrofluorometer [3] at room temperature. The fluorescent transitions from the excited $^5F_4$ level to the ground ^7F multiplets are tabulated in Table 1. The positions of the ^7F multiplets as obtained in this experiment are in good agreement with the calculated values [4].

Wavenumber in cm^{-1}	Transition	Position of ^7F levels above ground level
20555	$^5D_4 \rightarrow {}^7F_6$	0
18450	$^5D_4 \rightarrow {}^7F_5$	2105
17240	$^5D_4 \rightarrow {}^7F_4$	3315
17094		3461
16194	$^5D_4 \rightarrow {}^7F_3$	4361

Table 1. Fluorescent Transitions in the Terbium Phthalate Complex.

[1] S. P. Sinha, C. K. Jørgensen, and R. Pappalardo, Z. Naturforschg. **19 a**, 434 [1964].
[2] S. P. Sinha, Complexes of the Rare Earths, Pergamon Press, Oxford 1965.
[3] The author wishes to thank Kontron A.G., Zürich, and especially Mr. K. Rudow for putting the apparatus at his disposal.
[4] K. S. Thomas, S. Singh, and G. H. Dieke, J. Chem. Phys. **38**, 2180 [1963].