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On ESR Signals of Amber *)

by

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Summary. The pattern of ESR signals of amber containing Mn^{2+} differs from that of other samples. Although the pattern was expected, the fact points to the possible use of ESR as a quick method for distinguishing between some samples of amber.

Continuing the work on the properties of amber [1–4] the author tried to find out a criterion which could help establish the geographic origin of the samples. The examination of the ESR signal was chosen as a method which could possibly differentiate ambers of various origin. The following samples were examined.

1) Amber from Toczka, district of Gliwice, Upper Silesia (from the collection of Dr. Klette).

2) Amber from Peninsula of Taigonos, Syberia, USSR (from the collection of Dr. Goeppert, Mineralogical Museum of the University of Wrocław).

3) Dark amber from USSR (origin unknown).

4) Light amber from USSR (origin unknown).

For comparison two more samples were examined which can be considered as younger forms of naturally occurring resinous polymers, viz.:

5) Colophony,

6) African Copal.

The registered signals are depicted in Figs. 1–6.

The spectra in Figs. 2 and 3 are characterized by the presence of signals typical of the Mn^{2+} cation.

Indeed, according to the analysis carried out at the Institute of the History of Material Culture, sample (2) contains ca. 0.01 % Mn and a number of other cations (such as Na, Ca, Mg, Al, Fe, Cr, etc.). The presence of Mn^{2+} should account for the registered pattern of the signals.

From the examination of the samples it can be concluded that in particular cases when amber contains some mineral cations, such as Mn^{2+}, it can be distinguished by the pattern of its ESR signal.

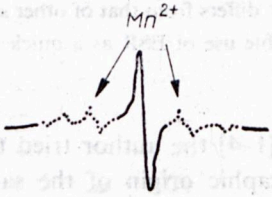
*) Contribution to the Chemistry of Amber. Part VI.

Toczka, Upper Silesia

Fig. 1

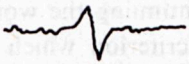
Taigonos, Siberia

Fig. 2



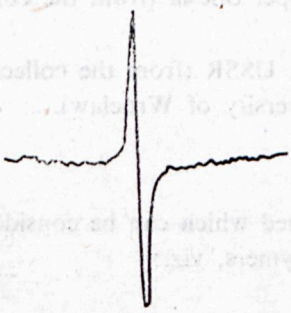
Dark, USSR

Fig. 3



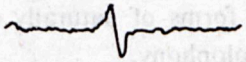
Light, USSR

Fig. 4



Colophony

Fig. 5



Copal

Fig. 6

Experimental

The ESR measurements were carried out in a Jeolco JES-ME3X apparatus at the Institute of Physical Chemistry of the Polish Academy of Sciences.

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Т. Урбаньски, **О сигналах ЭСР янтаря**

Содержание. Форма сигнала ЭСР янтаря содержащего Mn^{2+} отличается от других образцов. Конечно, можно было предвидеть эту разницу, тем не менее найденый факт свидетельствует о возможности быстрого идентифицирования некоторых образцов янтаря при помощи описанного метода.