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Mid-infrared spectroscopy for characterization of Baltic amber (succinite)

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**Mid-infrared spectroscopy for characterization of Baltic amber (succinite).**Ewa Wagner-Wysiecka<sup>a,b</sup><sup>a</sup> *Gdansk University of Technology, Faculty of Chemistry, Narutowicza 11/12, 80-233 Gdańsk, Poland*<sup>b</sup> *International Amber Association, Warzywnicza 1, 80-838 Gdańsk, Poland*

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**Abstract**

Natural Baltic amber (succinite) is the most appreciated fossil resin of the rich cultural traditions dating back to prehistoric times. Its unequivocal identification is extremely important in many branches of science and trades including archeology, paleontology, chemistry and finally mineralogical and gemological societies. Current methods of modification of natural succinite are more and more sophisticated making the identification of natural Baltic amber often challenging. In article the systematic analytical approach for identification of natural and modified under different conditions succinite, using mid-infrared spectroscopy (transmission, Drifts and ATR techniques) is presented. The correlation between spectral characteristics and properties of succinite is discussed pointing that the understanding of the nature of changes is the key of identification of this precious material.

**Keywords:** Baltic amber; succinite; natural succinite; modified succinite; properties; identification; mid-infrared spectroscopy

**1. Introduction**

Baltic amber - is a fossil resin, formed more than 40 million years ago from amber-bearing trees of Fennoscandia forest (nowadays Scandinavia) [1]. A mineralogical name of Baltic amber is succinite. This term was introduced by August Breithaupt [1,2] and comes from the Latin word *succus* (*Eng. juice*) used by Pliny the Elder in *Historia Naturalis*. Using term "succinite" allows to define a particular kind of amber without a confusion with Baltic Sea. In fact, when succinite was formed Baltic Sea did not exist. Moreover, nowadays when fossil resins of the world of different age and origin (e.g. Dominican, Mexican ambers) are more and more popular, the use of mineralogical names for diverse "ambers" seems to be reasonable.

Succinite can be found in secondary deposits in so called Gdańsk Delta (the Southern-East part of Baltic Sea), where the largest in the world amber mine "Primorskoje" in Yantarny-formely Palmnicken (Kaliningrad Oblast, Russian Federation) is localized. Succinite deposits

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