

EXPLOSION OF POLLEN GRAINS UNDER THE ELECTRON BEAM EFFECT OF THE SCANNING ELECTRON MICROSCOPE

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The scanning electron microscope technique made it possible to demonstrate several surface ornamentations of biological objects, too, which could not be investigated by the light microscope method. But some problems were pointed out concerning the SEM method. We should mention: MUIR and RAMPLEY (1969) studied the effect of the electron beam on various mounting and coating media, and wrote as follows; p. 145: „The purpose of the experiments was to determine the extent of the damage, if any, produced by the beam, on the adhesive, and to try to discover the most damage resistant combinations.” LEFFINGWELL et al. (1970): „The use of polyurethane adhesive-coated coverslips permits visual observation throughout the mounting procedure, and significantly reduces the charging effects obtained when specimens are mounted on coverslips without a substrate.” Several problems of techniques were discussed by LEFFINGWELL and HODGKIN (1971). HANKS and FAIRBROTHERS (1970) pointed out; p. 886: „The effect of various preparation techniques differ from species to species.” NILSSON et al. (1974) studied experimentally the collapse of pollen grains in scanning electron microscope.

During our SEM studies on recent and fossil spores and pollen grains we observed several times the fly away and the explosion of our objects of investigation. This may be in consequence of the charging. By increasing the accelerating beam voltage the explosion of the pollen grains may increase. From 20 KV we have increased gradually the accelerating beam voltage and the number of the exploded pollen grains increased. After this procedure we studied by LM method the slide and we observed several types of damage and explosion. Our figure demonstrates the explosion of the pollen grains of the recent *Eucommia ulmoides* OLIV.. The dried pollen grains were mounted on polyvinylchlorid adhesive, and coated with gold palladium. The explosion process is a little similar to a „microscopic supernova” and it may be presumed, that under charging and during the acceleration of the fly away explode the pollen grain.

Because we have observed other kind of damages of the palynomorphs after SEM studies we call attention of the palynologists for the LM studies of the palynomorphs after SEM investigations.

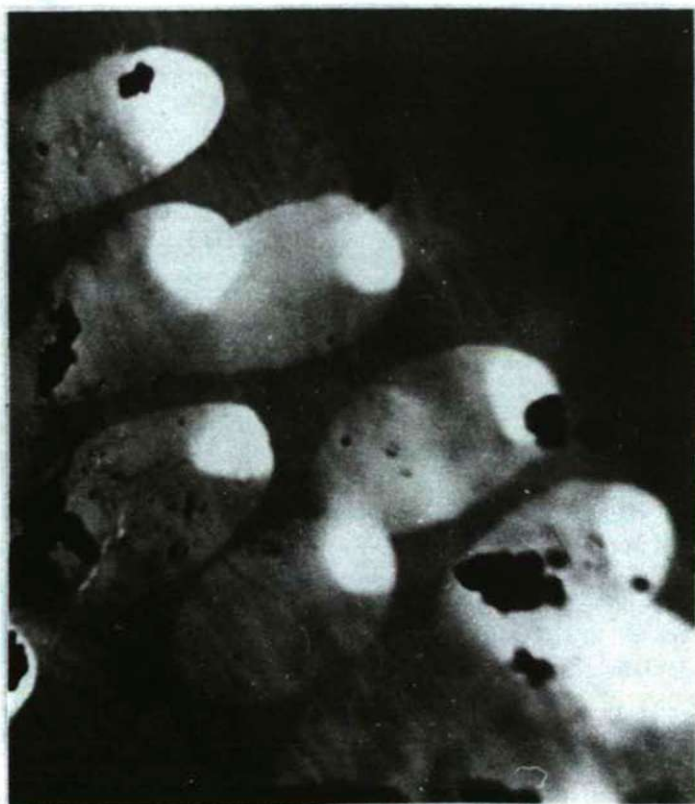


Fig. 1

LM picture of the coated polyvinylchlorid adhesive after the explosion of *Eucommia ulmoides* OLIV. pollen grains under the electron beam effect of the scanning electron microscope. x1000.

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