

**Provenance of the chalk grounds of the medieval icons  
from the National Museum in Kraków  
on the basis of their calcareous nannoplankton assemblages**

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Due to its peculiar features, Upper Cretaceous chalk was commonly used in arts as an underpainting layer, so-called whites, especially in Middle Ages. For arts, the white, fine-grained pelagic limestone, consisting of almost pure foraminiferal and nannoplankton ooze, was the most precious sort of chalk grounds. So far, the Boreal Chalk (Netherlands, N Germany, Denmark) is considered the main source of these kind of whites. The National Museum in Kraków (Poland) has a large collection of medieval orthodox icons, mostly coming from the Carpathians. Their origin is still disputable since there is no proper source of chalk whites in the Carpathians and their foreland. This study aims to recognize the provenance of the underpainting layers regarding their calcareous nannoplankton assemblages, the major component of whites. Moreover, the qualitative and quantitative analysis of these assemblages allow us to recognize similarities, and to compare with assemblages provided from localized outcrops.

Among 56 simple-smear slides taken from whites, 47 contain Upper Cretaceous nannofossil taxa (11 barren in nannofossil slides seems to be sampled from gypsum/anhydrite grounds). 45 slides indicate Upper Campanian—Upper Maastrichtian assemblages and 2 Turonian—Coniacian. The latter may represent Central Russia sources regarding the manner of painting of icons. 3 of 45 from the Campanian—Maastrichtians slides yield Tethyan assemblages and may come from the southern Carpathians and/or Balkans.

The rest, i.e. 42 of 45 slides provide Boreal nannofossil assemblages, dominated by *Micula staurophora*, *Arkhangelskiella* spp. and *Prediscosphaera* spp. The cluster analysis clearly separates the Turonian—Coniacian and Tethyan assemblages from the Boreal ones and shows the strong similarity between them. The second cluster analysis combines the slides sampled in the Chelm City outcrops (Lublin Upland, E Poland) and those from medieval icon reveals their close affinity.

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