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**SURFACE STRUCTURE OF PRINTED INK LAYER WITH NANOPHOTONIC ELEMENTS FOR SMART PACKAGING LABELING**

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***Research Methodology.*** *The article presents the method to predict the morphology of the surface structure of the ink layer with nanophotonic elements for printing labels for smart packaging, for development of which non-empirical methods were used.*

***Results.*** *The technological factors have been identified that define the morphology of the surface structure of the ink layer with nanophotonic elements for printing labels for smart packaging. The influence of these factors (the type of printing material, the concentration and nature of a filmmaker (ink carrier) in the ink, ink layer thickness on the impression and the type of intensification of ink layer consolidation on the printed impression) has been determined on the morphology of the surface structure the ink layer with nanophotonic elements.*

***Novelty.*** *For the first time, the theoretical study of the formation mechanism of the structure of the surface layer of an ink film during the consolidation of inks with nanophotonic elements on absorbing (porous) and non-absorbing (non-porous) materials has been conducted.*

***Practical Significance.*** *It has been determined that by taking into account the type of printing material, the concentration and nature of a filmmaker (ink carrier) in the ink, the ink layer thickness on the impression and the type of intensification of ink layer consolidation on the printed impression, the morphology of the surface structure the ink layer with nanophotonic elements, which directly affects the optical properties of printed ink layer on a on a printed impression, can be predicted when manufacturing labels for smart packaging.*