

Nanocomposites and nanomaterials

Features of measurement of contact angle of wetting inkjet suspensions based on BaTiO₃ by the analysis of binary image projection of drop

A.G. Nikulin, R.O. Kyrpal, S.E. Ivanchenko, A.V. Ragulya

Frantsevich Institute for Problems of Materials Science of NASU, Krzhyzhanovsky St., 3, Kyiv- 03142, Ukraine

E-Mail: nerrateen@gmail.com

Contact angle is an important characteristic, which is affected by the surface tension of liquids. Form of droplets after deposition on the substrate is very important, since it affects the shape of future coverage. As part of the suspensions includes light volatile components, the shape and size of the droplets changed over time. Different components have different affinity with the substrate material, through the selection of the composition of the substrate is possible to obtain the optimal conditions for the study of contact angle of wetting and further coating.

As objects of the study were used drops of barium titanate suspensions in methanol (CH₃OH), 1-propanol (C₃H₇OH) and n-butanol (C₄H₉OH), on the surface of the substrate Maylar (PET) coated with adhesive coatings and transparencies for laser printing (Xerox and Verbatim).

For preparation of suspensions used BaTiO₃ powder with a particle size of 20-25 nm. Spreading and evaporation of the solvent was observed during different times depending on the type of solvent until such time when the angle stop to change, or the solvent was completely evaporated. Were measured: area of drops, factor of round form of drops and wetting angle.

This research can give a reason for selecting the optimal composition of suspensions with controlled spreading and drying on a substrate for use as ink for inkjet technology. By introducing the relevant components in varying quantities can obtain multidimensional objects with predetermined properties.