Drop coating deposition Raman (DCDR) spectroscopy is a special method of Raman spectroscopy, which is based on the evaporation of solvent from a drop of solution or suspension on a hydrophobic surface. This typically leads to the formation of ring-shaped drying pattern, often called as „coffee ring“. As a result a preconcentration of a material and higher intensity of Raman signal in comparison with Raman scattering from solution is obtained. In this work several hydrophobic surfaces with different roughness and hydrophobicity were compared: a smooth substrate with polytetrafluorethylen (*pPTFE)* coating and nanorough substrates where surface hydrophobicity was formed by deposited cupper or argent nanoparticles with different concentration. It was shown that for DPPC liposome suspension stronger preconcentration is obtained by means of a nanorough substrate. When different nanorough substrate compared, no better improvement was acquired. As for the drying of drops at different temperatures (from 15°C to 60°C) deposited on the smooth *pPTFE* substrate and the substrate with argent nanoparticles, it was observed that Raman spectra did not reveal any spectral changes corresponding to phase transition of lipid. In case of drying at temperatures higher than a temperature of the phase transition, non-homogeneities were formed on the dried ring with higher Raman signal at the temperature 45°C. In conclusion, better preconcentration of the suspension is acquired both for higher hydrophobicity of the nanorough surface that is nonhomogenous and at drying temperatures higher than temperature of the phase transition.