The subject of the study was the structure of the field of the spherical particle in the non-magnetic and non-absorbent media near the dielectric surface. By the generalizing of the Weyl's method representation of spherical waves as the integral over plane homogeneous and evanescent waves for spherical waves of higher orders and of the problem of Mie scattering solution, the way of obtaining the solution of the problem of elecromagnetic waves scattering on a spherical particle near a substrate. The pictures of the distribution of the intensity and of the polarization were obtained. In the terms of the generalized three-dimensional Stokes parameters and the degree of the polarization were analyzed the influence of the substrate on the structure of the polarized near-field, depending on the such parameters of the system as the radius and height of the particles over the surface, polarization, wavelength and the angle of the incident wave, and the dielectric constant of the all elements of the system. On the basis of the results the regularities of the formation of the near-field structures were described. The methods of the preparation and control of this structure were demostrated. A method of increasing the efficiency of thin-film organic solar cells by dielectric spherical nanoparticles were offered. The optimal parameters of the nanoparticles and their arrangement in a solar cells were obtained.