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The ZnO thin layers were grown on glass, InP and pInP-nCdS substrates from zinc acetate dissolved in water-acetic acid-methanol solution having a molarity of 0.2 M by using the spray method in the argon flow in the temperature range of (250–450) °C. The dependence of optical properties of ZnO layers on growth temperature have been investigated. The optical transmittance has values of 80–85% in the wavelength range of (200–1000) nm. The using of ZnO of the thickness of (60–80) nm as antireflective layers in nCdS-pInP structures allowed to increase the photovoltaic cell efficiency by 3%. The photosensitivity of the fabricated nZnO-pInP structures covers the wavelength region from 450 nm up to 1100 nm and allows the more efficient utilization of the incident light.