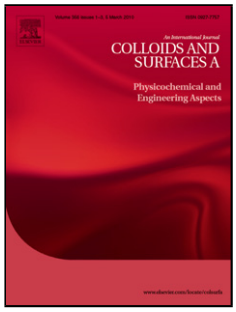

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LIGHT REFRACTION IN AQUEOUS SUSPENSIONS OF DIAMOND PARTICLES

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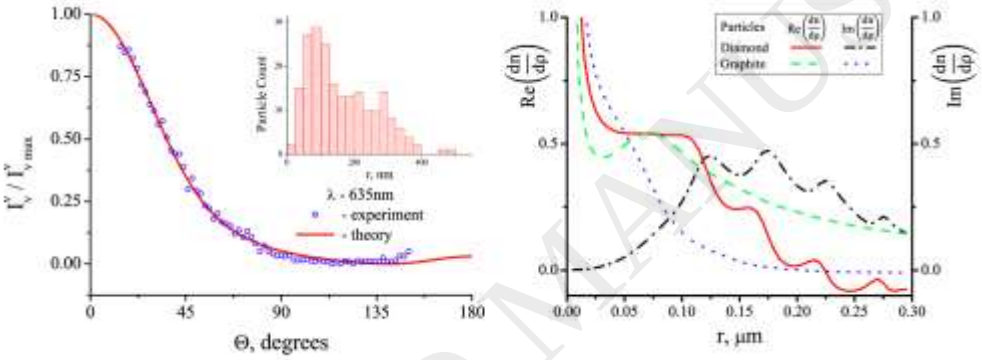
Graphical abstract



Abstract

In this paper the results of research of the influence of particle size and material in aqueous suspensions of diamond particles which included both diamond and graphite on suspension refractive index are presented. Eight fractions of nanodiamond were isolated using particle sedimentation and dilute suspensions were characterized using dynamic light scattering (DLS) method and electro-optical method. The increment of suspension refractive index was determined using diffraction, refraction, and reflection. Theoretical calculations of the dependence of refractive index increment of suspensions on the radius of diamond and graphite particles of spherical shape were carried out. The applicability of this approximation was supported by static light scattering experimental data. By comparing theoretical and experimental values of the increment of the refractive index it was possible to conclude that both diamond and graphite is present in the dispersed phase. It was shown that the removal of large particles from suspensions by centrifugation has little effect on its refractive index, but