Preparation of monodisperse polystyrene spheres by physical method

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Abstract	The preparation of monodisperse polystyrene spheres was carried out by physical method, i.e. milling and gamma irradiation processes, which used the solid commercial polystyrene. The solid polystyrene was dissolved by ethyl acetate at a concentration of 10%. The monodisperse particle arrangement was obtained by milling process which in this research the time duration varied by 8 and 60 minutes. Whereas the spherical particle structure was achieved by gamma irradiation at a dose varied by 5 KGy or 15 KGy. The yielded solution was characterized using Particle Size Analyser (PSA) and Scanning Electron Microscopy (SEM). The results showed that the optimum monodisperse polystyrene spheres solutions were produced by dissolving the solid polystyrene using ethyl acetate and milling the solution for 8 minutes and radiating the solution using gamma radiation at a dose of 15 KGy. The resulting solution has a particle diameter range of 23-57.8 nm and a span of 0.49-0.59.
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