Comparison of scanning electron microscopy, dynamic light scattering and analytical ultracentrifugation for the sizing of poly(butyl cyanoacrylate) nanoparticles

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Received 8 September 2003; accepted 10 October 2003

Dynamic Light Scattering
<paper review>

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21 May, 2020

Three different methods were used to determine the size and size distribution of PBCA nanoparticles (nanoparticles formed by anionic emulsion polymerization of butylcyanoacrylate in the presence of poloxamer 188 as a stabilizer).

	scanning electron microscopy **SEM**	dynamic light scattering **DLS**	analytical ultracentrifugation **AUC**
Particle diameter	167 nm	199 nm	184 nm
advantages	detailed shape and morphological information	short time and low cost	measurements can be obtained at low particle concentrations
		the movement of particles in a centrifuge (ANUC) shows a stronger size dependence than the diffusion coefficient (DLS)	
disadvantages	risk of changes in particle properties during drying and contrasting	measurement will be identical or ~larger than the 'real' particle	sedimentation of nanoparticles shall be slow enough to obtain sufficient data points

A. Bootz, V. Vogel, D. Schubert, J. Kreuter, Comparison of scanning electron microscopy, dynamic light scattering and analytical ultracentrifugation for the sizing of poly(butyl cyanoacrylate) nanoparticles, Eur. J. Pharm. Biopharm. 57 (2004) 369–375. https://doi.org/10.1016/S0939-6411(03)00193-0.