Bespoke contrast-matched diblock copolymer nanoparticles enable the rational design of highly transparent Pickering double emulsions

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We describe the preparation of transparent oil-in-water Pickering emulsions using contrast-matched organic nanoparticles. This is achieved via addition of either sucrose or glycerol to an aqueous dispersion of diblock copolymer nanoparticles prior to homogenization with an equal volume of oil. The resulting Pickering emulsions comprise polydisperse oil droplets of 20-100 μm diameter and exhibit up to 96 % transmittance across the visible spectrum. In contrast, control experiments using non-contrast-matched copolymer nanoparticles as a Pickering emulsifier only produced conventional turbid emulsions. Therefore, for the preparation of highly transparent Pickering emulsions it is essential to use isorefractive nanoparticles in order to minimize light scattering. Finally, contrast-matched *hydrophobic* diblock copolymer nanoparticles are prepared and, when employed in combination with the *hyrophilic* nanoparticles, transparent oil-in-water-in-oil Pickering double emulsions can be obtained