

Density and density
distribution of polymer
particles in H₂O/D₂O
density gradients

About 1 µg of particle mass will be dispersed in water (concentration < 1 ppm). This highly diluted dispersion is layered on top of 150 µL D₂O in a synthetic boundary cell and centrifuged for some minutes at 30,000 rpm. Inter-diffusion of the normal and heavy water forms a density gradient ranging between 1,0 and 1,1 g/cm³. The particles sediment or float on the gradient toward the position of their own density. The particle band can be detected by absorption whereas the shape of the density gradient is recorded by interference.

The method is very useful for the control of copolymer composition of latex particles.

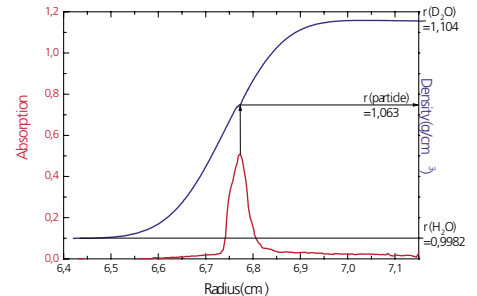


Figure 1
Density gradient H₂O/D₂O (blue) and distribution of the polymer (red) vs. radial position in the centrifuge cell (Example: acrylic copolymer latex)