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List of important symbols and notations

\otimes	convolution operator	
A_2	the second virial coefficient	
$\langle b \rangle$	coherent neutron scattering length	$[10^{-12} \text{ cm}]$
c	concentration	$[\text{mg/mL}]$
CM (or c.m.)	center of mass	
D	maximum particle diameter	$[\text{\AA}]$
DHO	damped harmonic oscillator	
DWF	Debye-Waller factor	
D_{TR}	translational diffusion coefficient	$[10^{-5} \text{ cm}^2/\text{s}]$
D_{r}	rotational diffusion coefficient	$[\text{meV}]$
EC	empty container	
FWHM	full width at half maximum	
$G(\mathbf{r}, t)$	pair correlation function	
$G_{\text{S}}(\mathbf{r}, t)$	self correlation function	
$g_{\text{CM}}(\mathbf{r})$	static pair correlation function of the center of mass of the molecule	
$H_1(\mathbf{k}_0, \mathbf{k})$	1 st order transmission factor	
HWHM	half width at half maximum	
h	thickness of the hydration shell	
\hbar	reduced Planck constant, $\hbar = (6.62607 \times 10^{-34} / 2\pi) \text{ J}\cdot\text{s} \approx 0.6583 \text{ meV}\cdot\text{ps}$	
$\hbar\omega$	energy transfer suffered by the neutron	$[\text{meV}]$
$I(Q)$	scattering intensity (at infinite dilution) in the small-angle scattering experiment	
$I(Q, c)$	scattering intensity in the small-angle scattering experiment	
$I(Q, t)$	intermediate scattering function	
$I_{\text{SELF}}(Q, t)$	self intermediate scattering function	
$I_{\text{QENS}}(Q_{\text{EL}})$	QENS integral (i.e. integral of $S_{\text{EXP}}(\varphi, \omega)$)	
\mathbf{k}	wave vector	$[\text{\AA}^{-1}]$
\mathbf{k}_0	incident wave vector	$[\text{\AA}^{-1}]$
Lor	Lorentzian	
M	molecular mass	$[\text{g/mol}]$
MSC	multiple scattering	
N_{HYD}	number of water molecules in the hydration shell	
n	number density	$[\text{cm}^{-3}]$
PFG-NMR	pulsed field gradient nuclear magnetic resonance	
Q	momentum transfer	$[\text{\AA}^{-1}]$
Q_{EL}	modulus of the elastic momentum transfer	$[\text{\AA}^{-1}]$
$R(\varphi, \omega)$	energy resolution function	

R_g^2	square of the radius of gyration	$[\text{\AA}^2]$
$S(Q, \omega)$	scattering function	$[\text{meV}^{-1}]$
$S_{\text{INC}}(Q, \omega)$	incoherent scattering function	$[\text{meV}^{-1}]$
$S(Q)$	intermolecular structure factor of the center of mass	
$S(Q, c)$	the same as $S(Q)$, in this notation the concentration dependence is stressed	
SC	sample container	
Sc.F.	Scaling factor	
T	absolute temperature	$[\text{K}]$
T_s, T_{EC}	transmission of the sample and empty cell, respectively	
$\langle u^2 \rangle$	mean square displacement	$[\text{\AA}^2]$

Greek letters

α	sample angle	
Γ	damping constant of the DHO	$[\text{meV}]$
$\gamma_{\text{CM}}(\mathbf{Q})$	the space-Fourier transform of $\mathbf{g}_{\text{CM}}(\mathbf{r})$	
$\gamma(r)$	correlation function of the excess scattering density	
δ	delta function	
δ_{ij}	Kronecker symbol	
ΔE	full width at half maximum (FWHM)	$[\text{meV}]$
λ	wavelength	$[\text{\AA}]$
λ_0	incident neutron/X-ray wavelength	$[\text{\AA}]$
Π	osmotic pressure	
ρ_0	solvent scattering density	$[\text{cm}^{-2}]$
ρ_{AV}	average solute scattering density	$[\text{cm}^{-2}]$
$\Delta\rho_{\text{AV}}$	scattering contrast	$[\text{cm}^{-2}]$
$\rho(\mathbf{r})$	scattering density	$[\text{cm}^{-2}]$
σ_{INC}	incoherent scattering cross section	$[\text{barn}=10^{-24} \text{cm}^2]$
σ_{COH}	coherent scattering cross section	$[\text{barn}=10^{-24} \text{cm}^2]$
σ_{S}	scattering cross section, $\sigma_{\text{INC}} + \sigma_{\text{COH}}$	$[\text{barn}=10^{-24} \text{cm}^2]$
σ_{A}	absorption scattering cross section	$[\text{barn}=10^{-24} \text{cm}^2]$
σ_{R}	standard deviation of the Gaussian function	
τ_{TR}	time between the successive jumps (in translational diffusion)	$[\text{ps}]$
τ_{ROT}	rotational correlation time	$[\text{ps}]$
ψ	polar angle	
φ	scattering angle	
Ω	solid angle	
ω	circular frequency	