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Hydration of hyaluronan in electrostatic self-assemblies

Hyaluronic acid (HA) is one of the most important polysaccharide in biology. It is often associated with proteins (or other molecules) by specific interactions, but also via electrostatic interactions, hydrogen bonding and hydrophobic forces. One important property of HA is that its biological function can be various depending on its molecular weight and like any biological system, its functionality is related to the dynamics of hydration water [1]. We investigated the hydration water dynamics around HA molecules of distinct molecular masses in pure water as well as in their complexes with oppositely charged surfactants (Dodecyltrimethylammonium Bromide, DTAB) by the means of elastic incoherent neutron scattering. With the aim of understanding the role of water molecules surrounding HA chains in the mechanisms of associations, in particular as function of the chain length of HA, we performed elastic neutron scattering on the IN13 CRG beamline at the Institut Laue Langevin, France. From the pico- to the nanosecond time scale, IN13 gives access to the dynamics of water molecules on one side, and to polymer or larger molecule dynamics on the other side.

1. J. M. Cyphert, C. S. Trempus, S. Garantziotis, *Int. J. Cell Biol.* 2015 (2015), 563818.

Preferred topic

Biopolymers

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