Dynamic light scattering

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Depolarized dynamic light scattering (DDLS) can be used to monitor molecular reorientation in supercooled liquids in a wide time and temperature range. The method proves particularly useful in complex dynamic environments, like for example in multi component systems or for supercooled liquids in various confinement situations. A few examples will demonstrate how DDLS is able to elucidate the dynamic behaviour in such systems often in combination with other techniques like quasielastic neutron scattering and broadband dielectric spectroscopy. For the case of ionic liquids it is of special interest to clarify the relation between molecular motion and charge transport. While the former is accessible with DDLS, the motion of charges is monitored with dielectric spectroscopy and it turns out that in many instances both phenomena are strongly coupled at high temperatures but decouple close to the glass transition.