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Self-Assembly of Guanosine Molecules in Solutions ZHENG LI, Case Western Reserve University, MAXWELL ORSENO, PRASENJIT BOSE, KIRIL STRELETZKY, Cleveland State University, ALEX JAMIESON, Case Western Reserve University — Guanosine and 3-Acetyl Guanosine monomers are expected to form cylindrical polymeric rods in a solution of KCl and H2O. Multi-angle Depolarized Dynamic Light Scattering (DDLS) and Static Light Scattering were used to study these solutions at various monomer concentrations. The correlation functions obtained from VV and VH experiments of DDLS were fitted to a sum of two stretched exponentials and their decay rates (G) were obtained using spectral time moment analysis. The diffusion coefficients deduced from G were analyzed to find length of the rods formed by Guanosine monomers. The concentration dependences of diffusion coefficients were compared with theoretical models of dilute and semi-dilute regimes. The fast mode of VV DDLS measurements was attributed to pure translation diffusion of rods; the slow VV mode had properties of large dynamic aggregates formed in solutions. The fast mode of VH DDLS had properties rotational diffusion, while the slow VH mode was found to be similar to the slow VV mode (large dynamic aggregates). SLS measurements at different solution concentrations yielded the aggregation concentration at which significant formation of rods occurs. The apparent molecular weight and radius of gyration of the rods were inferred from SLS spectra at different concentrations of Guanosine.

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