Supplementary Information

Coupling and Decoupling between Translational and Rotational Dynamics in Supercooled Monodisperse Soft Janus Particles

Qing-Zhi Zou,[†] Zhan-Wei Li,[†] You-Liang Zhu,[†] and Zhao-Yan Sun[*,†]

State Key Laboratory of Polymer Physics and Chemistry, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun 130022, China; University of Science and Technology of China, Hefei, 230026, China, and Xinjiang Laboratory of Phase Transitions and Microstructures in Condensed Matters, College of Physical Science and Technology, Yili Normal University, Yining, 835000, China

E-mail: zysun@ciac.ac.cn

[*]To whom correspondence should be addressed

[†]State Key Laboratory of Polymer Physics and Chemistry, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun 130022, China; University of Science and Technology of China, Hefei, 230026, China

[‡]Xinjiang Laboratory of Phase Transitions and Microstructures in Condensed Matters, College of Physical Science and Technology, Yili Normal University, Yining, 835000, China

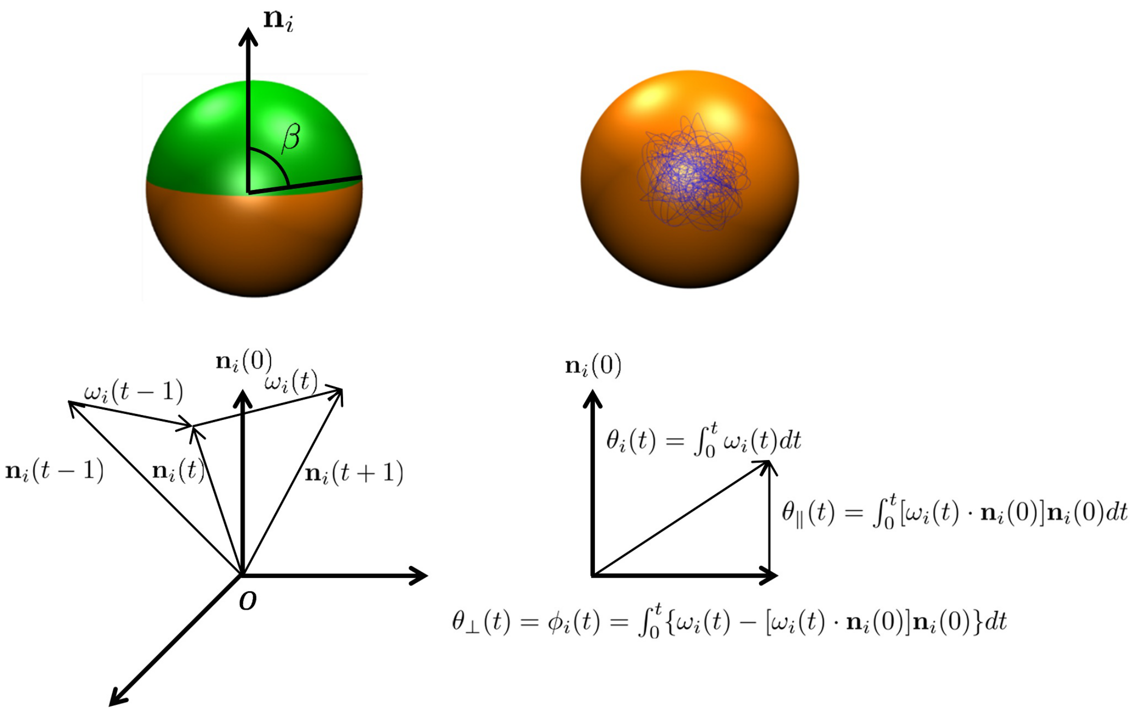

Figure S1: The Schematically illustration of vertical and horizontal components of the total angular displacement. In MSAD, The total angular displacement $\theta_i(t)$ is given by $\theta_i(t) = \int_0^t \omega_i(t)dt$, where $\omega_i(t)$ is the angular velocity of particle i at time t. In RMSAD, The total reorientational angular displacement $\phi_i(t)$ is defined as $\phi_i(t) = \int_0^t \{\omega_i(t) - [\omega_i(t) \cdot \mathbf{n}_i(0)]\mathbf{n}_i(0)\}dt$, where $\omega_i(t)$ is the angular velocity of particle i at time t. Since the quantity $\omega_i(t) - [\omega_i(t) \cdot \mathbf{n}_i(0)]\mathbf{n}_i(0)$ is the vertical component of $\omega_i(t)$ along $\mathbf{n}_i(0)$, $\phi_i(t)$ can be regarded as the vertical projection of total angular displacement along particle orientation at initial time. It is the vertical component of total angular displacement that makes a contribution to the particle reorientation.

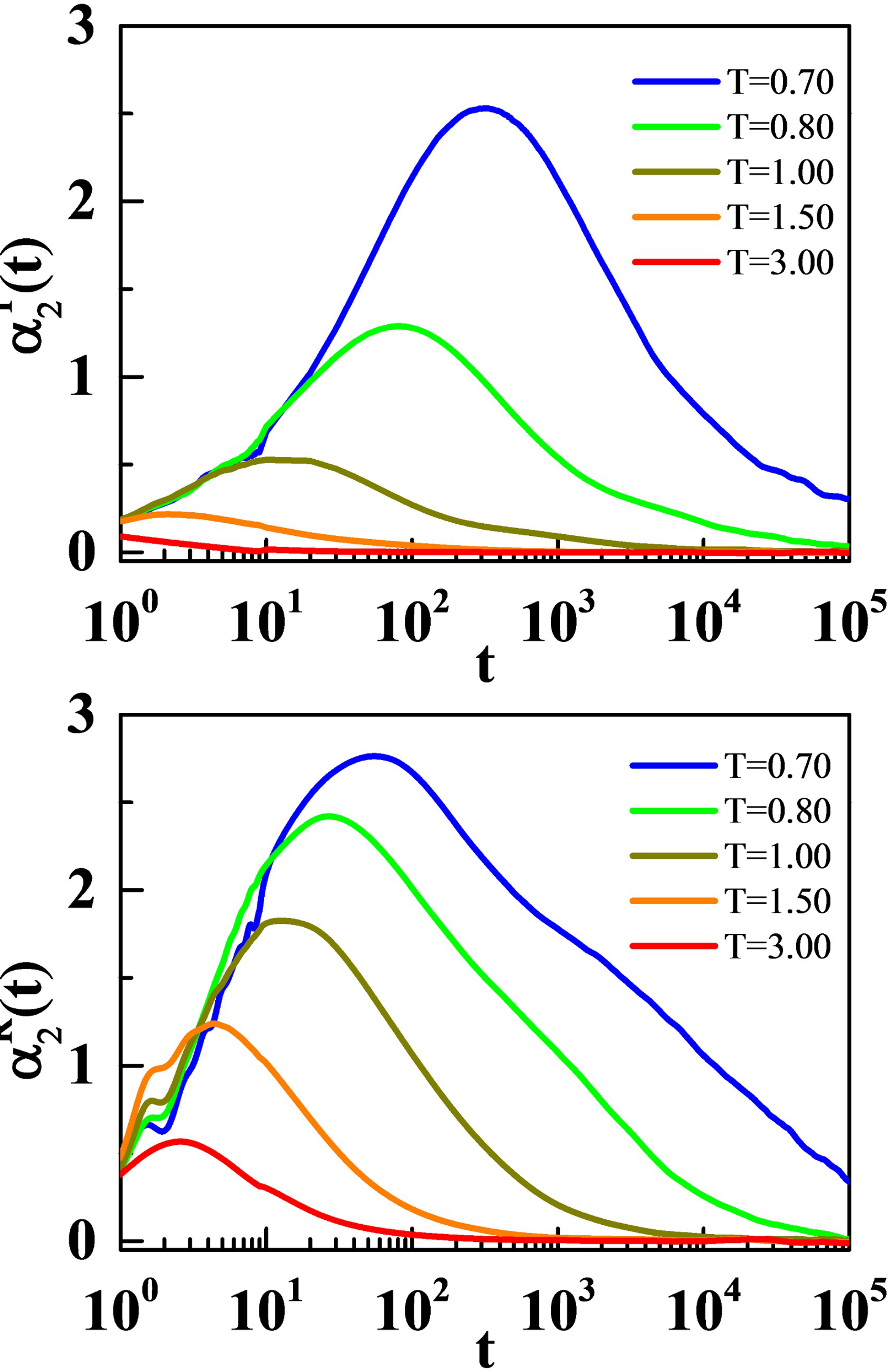

Figure S2: The temperature dependence of translational $\alpha_2^T(t)$ and rotational $\alpha_2^R(t)$ non-Gaussian parameters.