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## 2 **Supplementary Information for**

### 3 **Seeing through a glass clearly: Experimental observation of the marginal glass phase**

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#### 7 **This PDF file includes:**

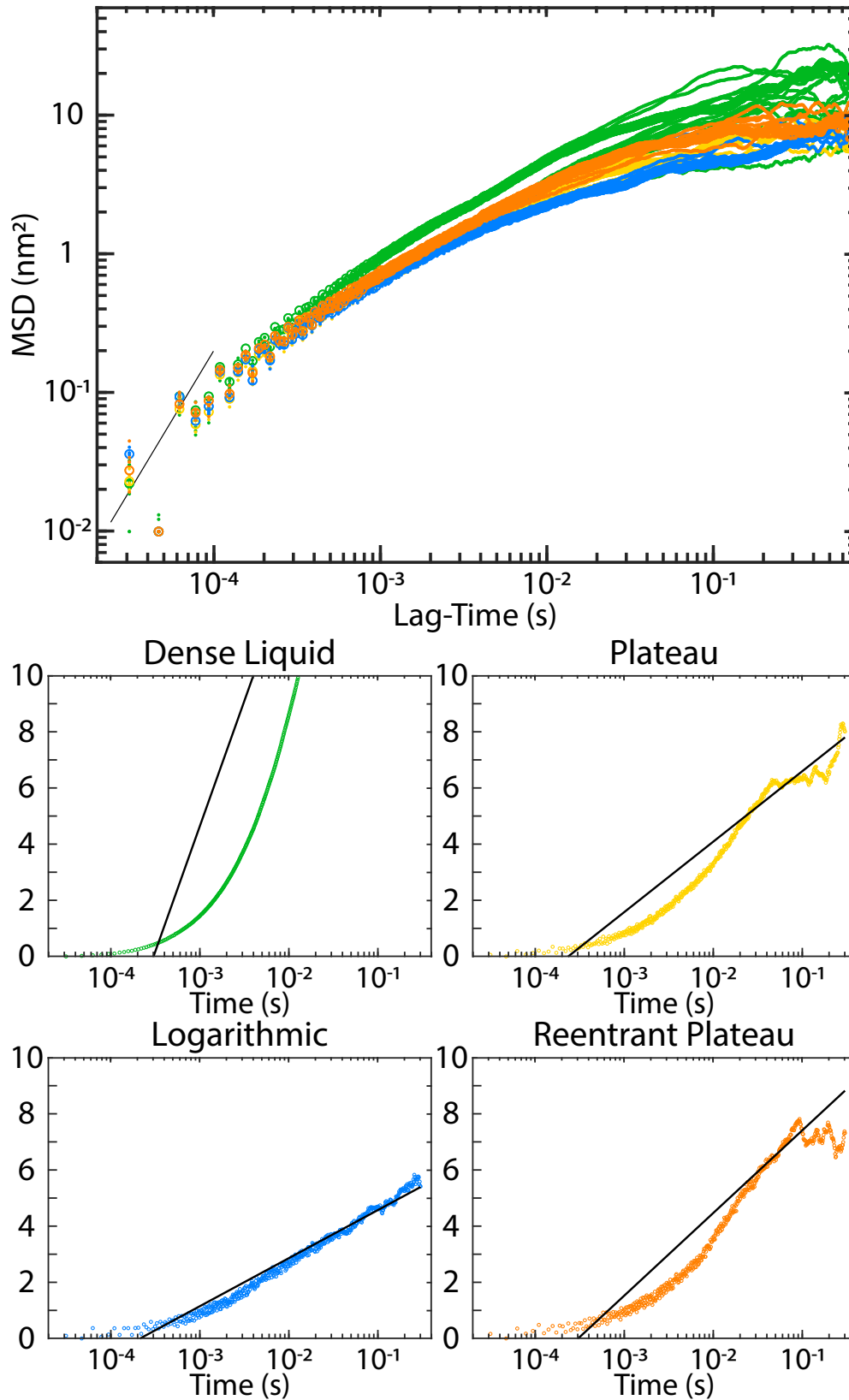
8     Supplementary text

9     Figs. S1 to S7

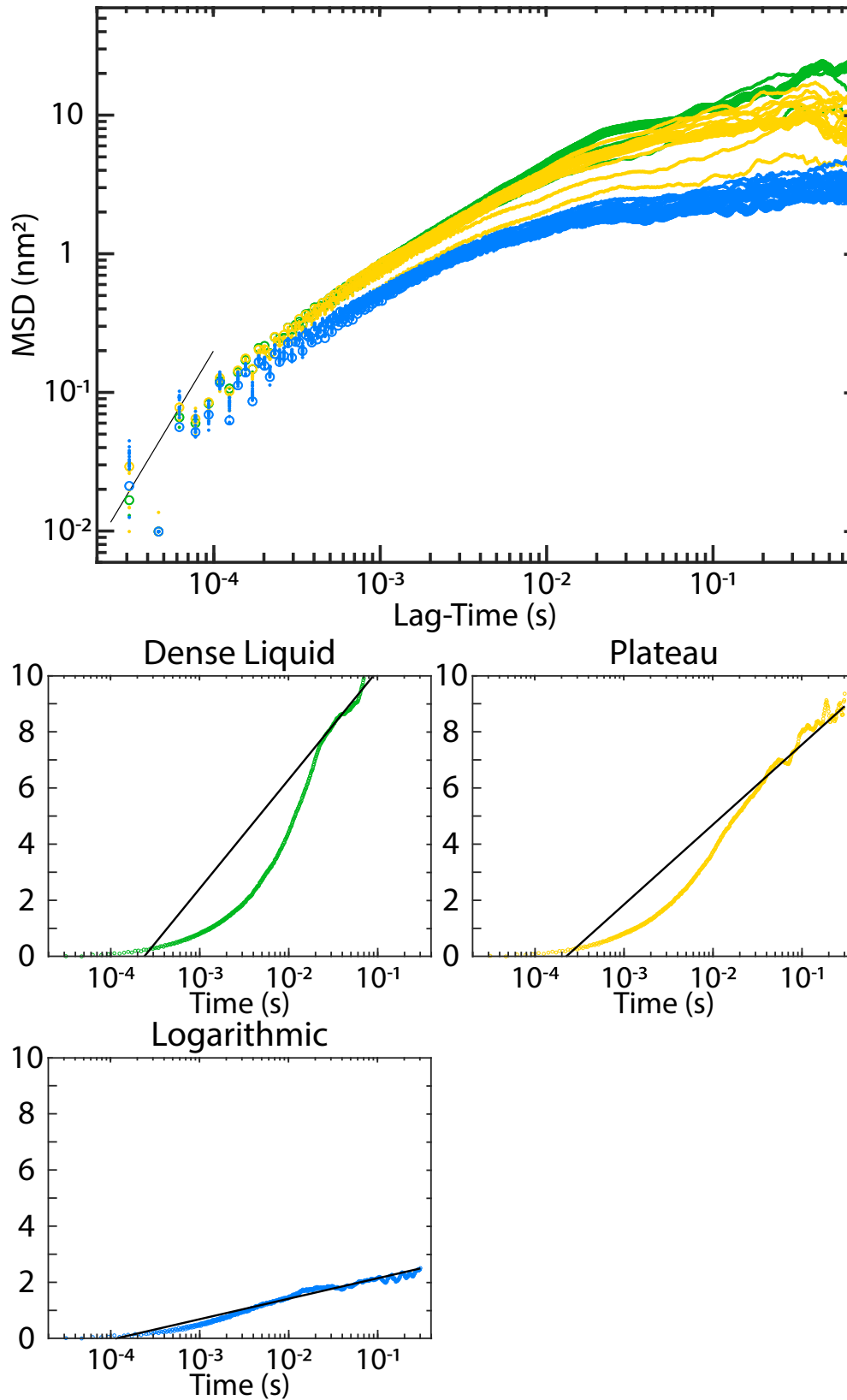
10 **Supporting Information Text**

11 **Sedimenting MSDs extended**

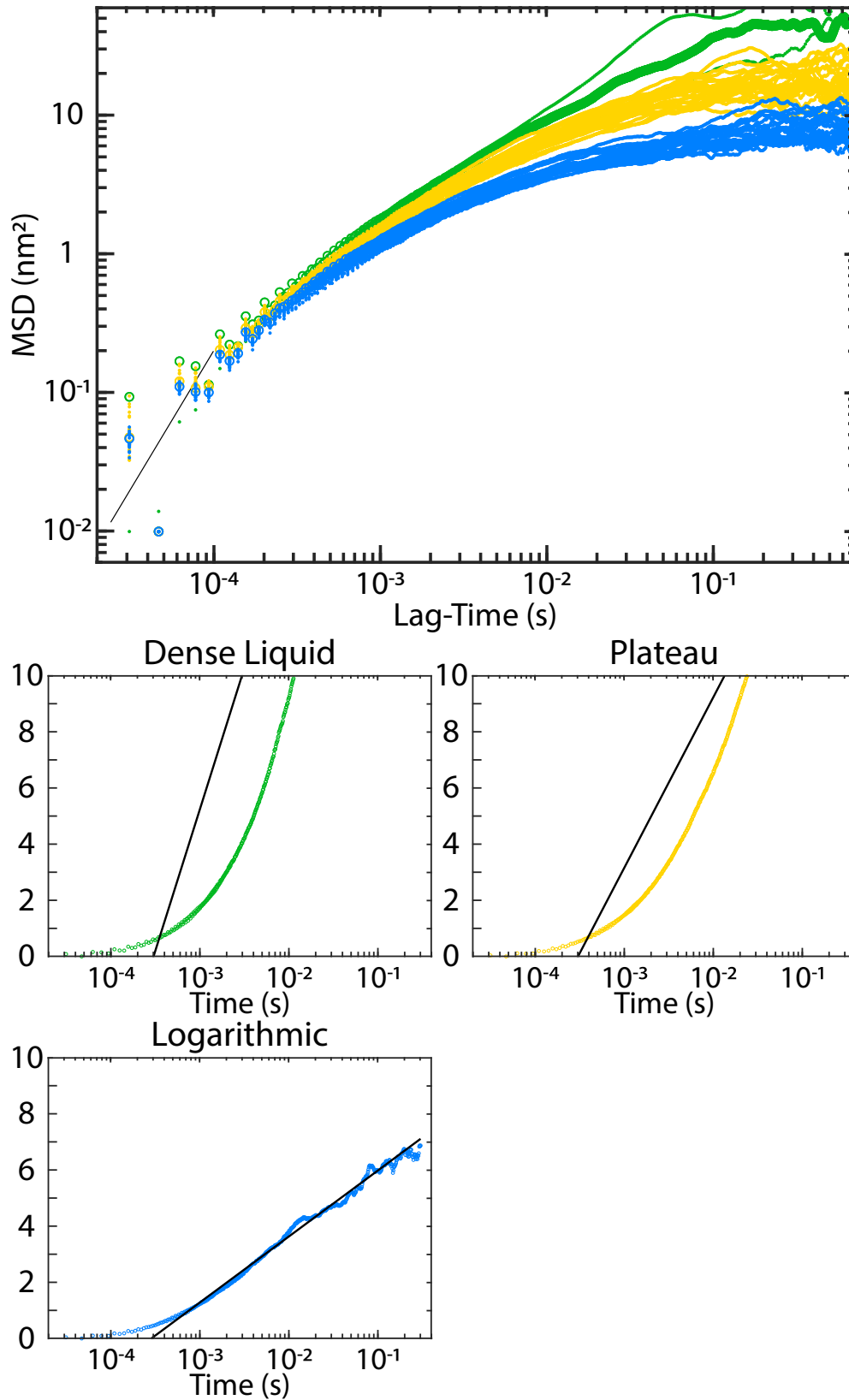
12 Here we provide an extended look at the short time mean squared displacements (MSDs) we have taken from slowly sedimenting  
13 tracer particles. We observe system to system variance in the quantitative features while all systems remain in broad agreement  
14 about the different qualitative behaviors seen as the system continues to sediment, passing through three regimes: 1) a dense  
15 liquid, 2) a plateau/stable glass regime, and 3) a logarithmic/marginal glass regime. We have also included several sedimenting  
16 tracer systems, figure [S3](#) and [S2](#), that do not have a reentrant plateau but instead remain in the logarithmic regime through  
17 the end of our data collection window.



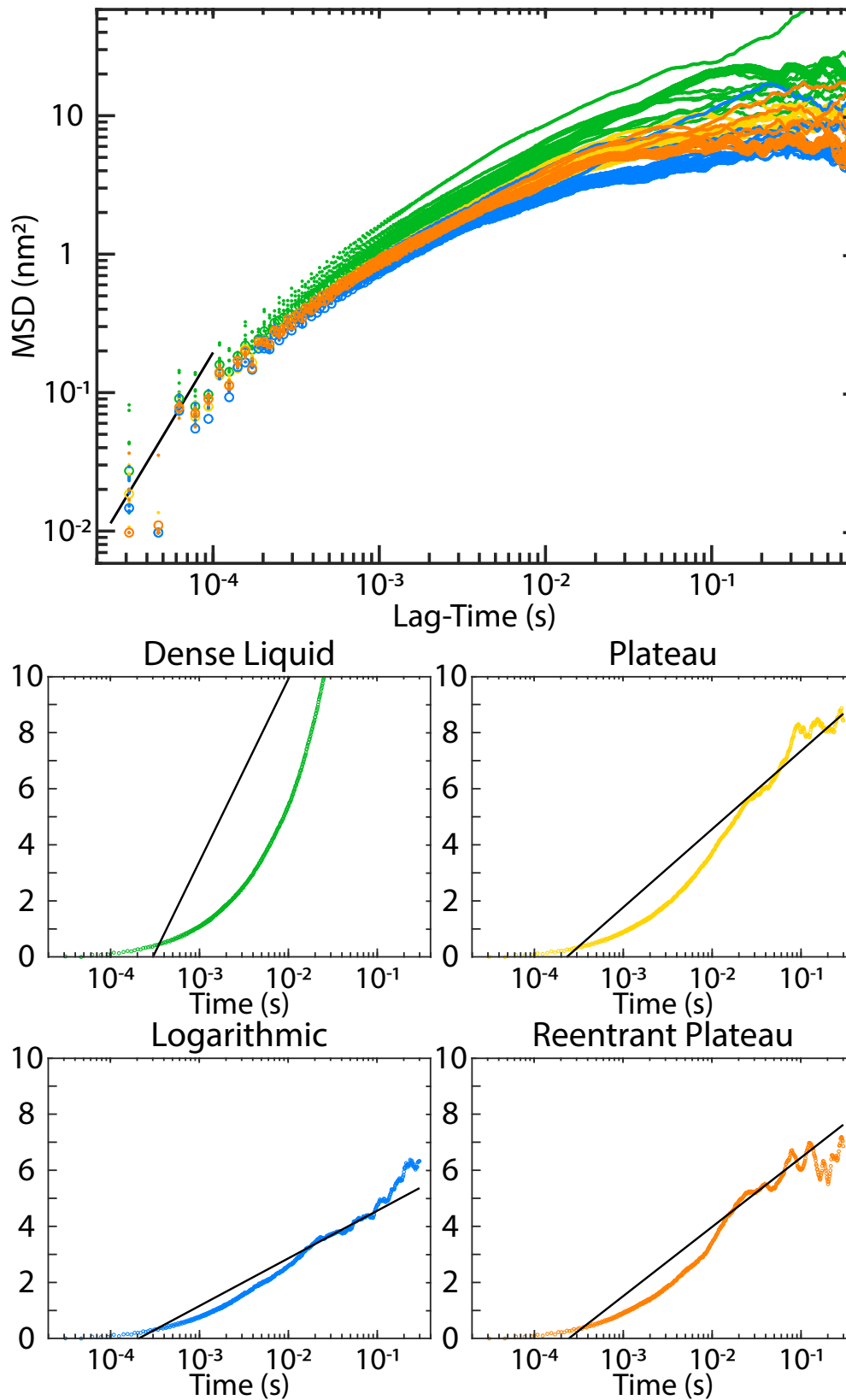
**Fig. S1.** Data obtained starting on the evening of September 25, 2019. MSD system for a sedimenting tracer particle. At the top we show the MSDs for all 40 different times sampled. The MSDs are colored based on their phase space location: green for dense liquid, yellow for plateau, blue for logarithmic, and orange for reentrant plateau. The bottom four graphs show a logarithmic fit confirming that a representative blue curve has a logarithmic behavior.



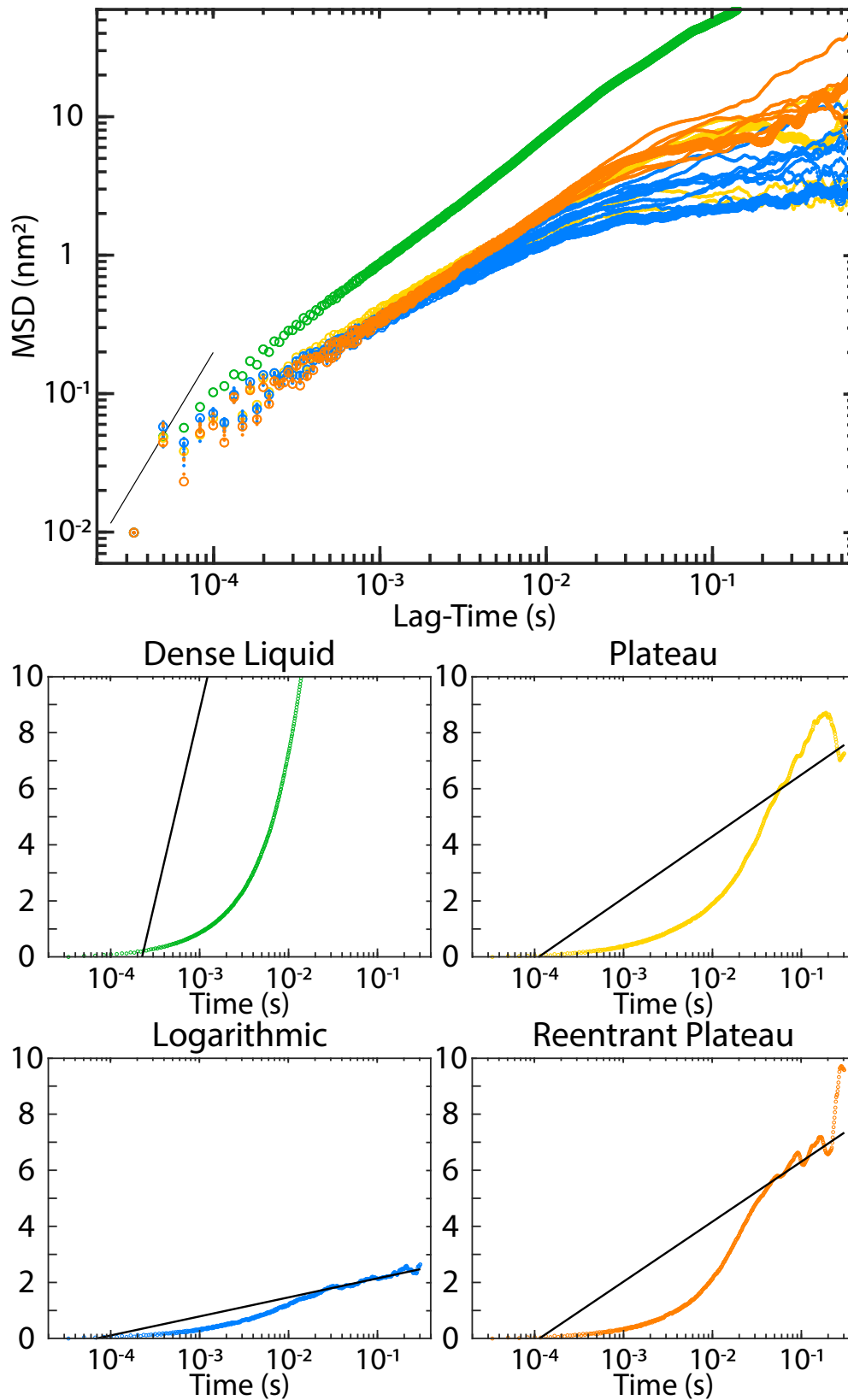
**Fig. S2.** Data obtained starting on the evening of October 6, 2019. MSD system for a sedimenting tracer particle. At the top we show the MSDs for all 40 different times sampled. The MSDs are colored based on their phase space location: green for dense liquid, yellow for plateau, blue for logarithmic. The bottom three graphs show a logarithmic fit confirming that a representative blue curve has a logarithmic behavior.



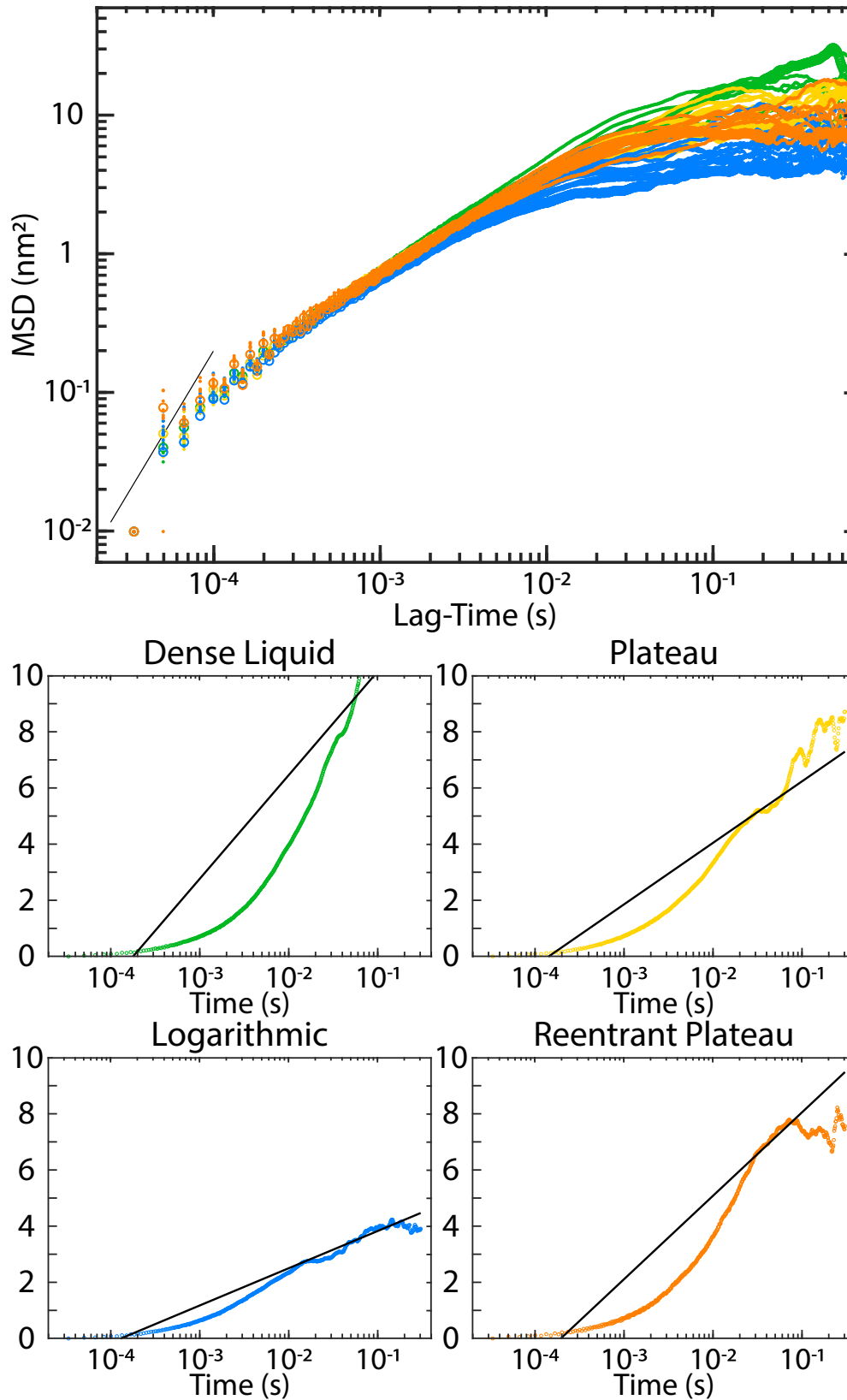
**Fig. S3.** Data obtained starting on the evening of September 21, 2019. MSD system for a sedimenting tracer particle. At the top we show the MSDs for all 40 different times sampled. The MSDs are colored based on their phase space location: green for dense liquid, yellow for plateau, blue for logarithmic. The bottom three graphs show a logarithmic fit confirming that a representative blue curve has a logarithmic behavior.



**Fig. S4.** Data obtained starting on the evening of October 10, 2019. MSD system for a sedimenting tracer particle. At the top we show the MSDs for all 40 different times sampled. The MSDs are colored based on their phase space location: green for dense liquid, yellow for plateau, blue for logarithmic, and orange for reentrant plateau. The bottom four graphs show a logarithmic fit confirming that a representative blue curve has a logarithmic behavior.

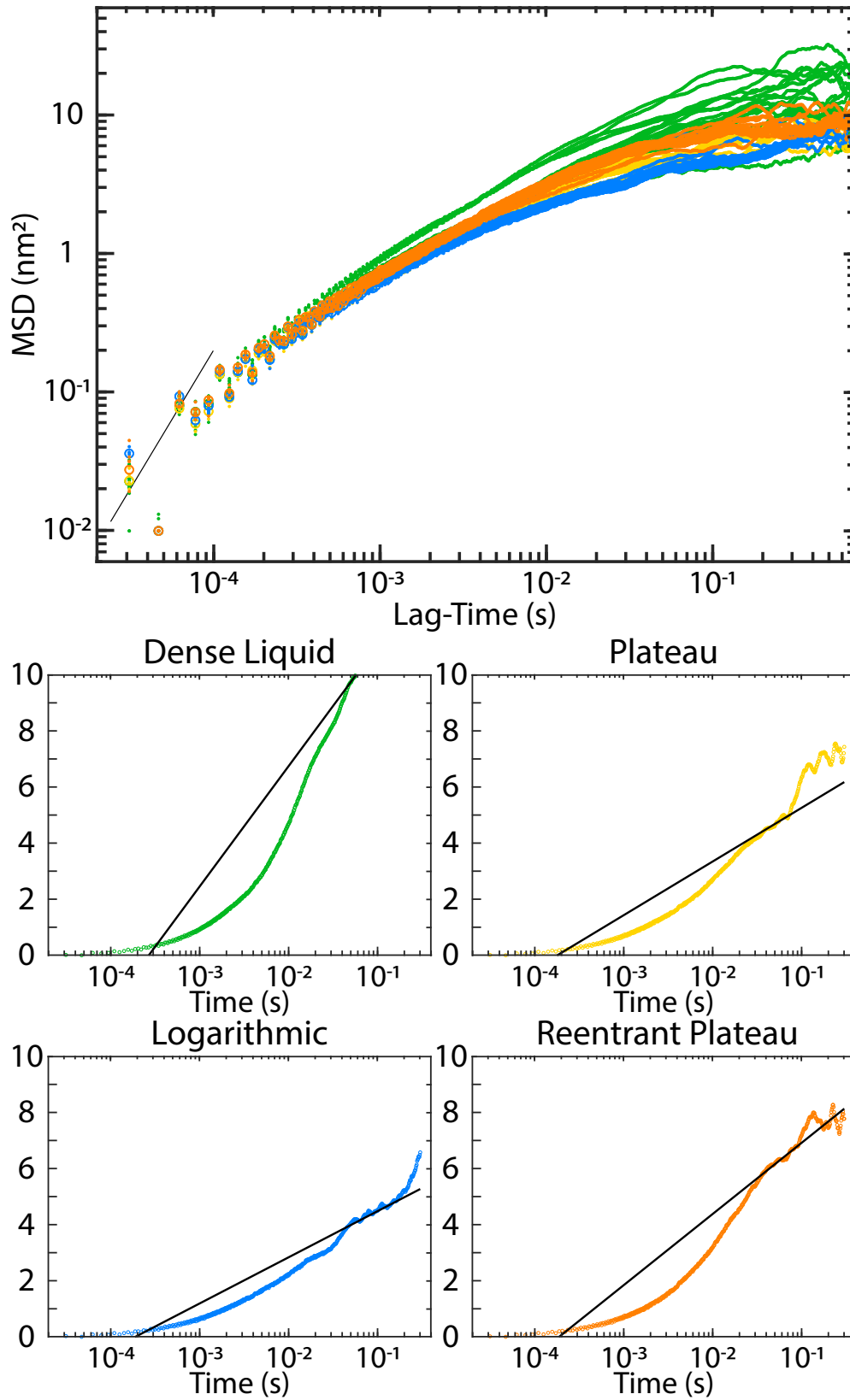


**Fig. S5.** Data obtained starting on the evening of October 22, 2019. MSD system for a sedimenting tracer particle. At the top we show the MSDs for all 40 different times sampled. The MSDs are colored based on their phase space location: green for dense liquid, yellow for plateau, blue for logarithmic, and orange for reentrant plateau. The bottom four graphs show a logarithmic fit confirming that a representative blue curve has a logarithmic behavior.



**Fig. S6.** Data obtained starting on the evening of October 13, 2019. MSD system for a sedimenting tracer particle. At the top we show the MSDs for all 40 different times sampled. The MSDs are colored based on their phase space location: green for dense liquid, yellow for plateau, blue for logarithmic, and orange for reentrant plateau. The bottom four graphs show a logarithmic fit confirming that a representative blue curve has a logarithmic behavior.





**Fig. S7.** Data obtained starting on the evening of September 23, 2019. MSD system for a sedimenting tracer particle. At the top we show the MSDs for all 40 different times sampled. The MSDs are colored based on their phase space location: green for dense liquid, yellow for plateau, blue for logarithmic, and orange for reentrant plateau. The bottom four graphs show a logarithmic fit confirming that a representative blue curve has a logarithmic behavior.