Ryohei Seto

Personal Data

Nationality: Japanese
Birth: 08 August 1976
Work: Wenzhou Institute, University of Chinese Academy of Sciences
No.1 Jinlian Road, Longwan District,
Wenzhou, Zhejiang, 325000, China
Email: seto@ucas.ac.cn
Website: https://ryseto.github.io
Phone: +86 137 1821 2231

Research Experience

2019.10–present | *PI researcher (Professor)*, Wenzhou Institute, University of Chinese Academy of Sciences, Wenzhou, China

2020.4–present | *Visiting Professor*, Graduate School of Simulation Studies, University of Hyogo, Kobe, Japan

2021.5–2021.5 | *Visiting Professor*, BCAM visiting fellow, Basque Center for Applied Mathematics . Bilbao, Spain

2021.5–2021.6 | *Visiting Fellow*, Basque Center for Applied Mathematics, Bilbao, Spain

2019.7–2019.9 | *Specially Appointed Researcher*, Department of Earth and Space Science, Osaka University, Osaka, Japan

2019.5–2019.7 | *Visiting Researcher*, Department of Materials Physics, Nagoya University, Nagoya, Japan

2019.2–2019.5 | *Visiting Researcher*, Center of Soft Matter Physics and its Applications, Beihang University, Beijing, China

2018.4–2019.1 | *Program-Specific Researcher*, Transport Phenomena Group, Department of Chemical Engineering, Kyoto University, Kyoto, Japan
Worked on normal stress differces and shear jamming of dense suspensions.

2015.1–2018.3 | *Group Leader*, Mathematical Soft Matter Unit, Okinawa Institute of Science and Technology Graduate University, Onna, Japan

2012.10–2014.12 | *Research Associate*, the Levich Institute, City College of New York, New York, USA

2012.1–2012.9 | *Postdoctoral Researcher*, Max Plank Institute for Polymer Research, Physics at Interfaces group, Mainz, Germany.

2009.11–2011.12 | *Postdoctoral Researcher*, Technical University of Munich, Chair of process systems engineering, Freising, Germany

2008.10–2009.10 | *Postdoctoral Researcher*, Laboratoire de Genie Chimique, Université Paul Sabatier, Toulouse, France
Examined compaction processes of colloidal gels under pressure with simulations.

2006.10–2008.9 | *Postdoctoral Researcher*, Laboratoire de Physique des Solides, Université Paris-Sud 11, Orsay, France
Developed a quasi-static Discrete Element Method with cohesive contact model to study yielding behaviors of colloidal gels.

Teaching Experience

2016 | Grant Writing Peer Support Group for OIST researchers

2015, 2016 | OIST Open Campus and Science Festival
Outreach teaching activities

2006 | *Lecturer* at Ritsumeikan University, College of Science and Engineering, Kusatsu, Japan
Lectures and practical courses on computer programming.

2006 | *Lecturer* at Ryukoku University, Faculty of Science and Technology, Otsu, Japan
Lectures on quantum mechanics.

Education

Mar. 10, 2006 | *Doctor of Science* in Physics, Ritsumeikan University, Kyoto, Japan
Thesis: "Effect of doping disorder on the excess conductivity of high-Tc superconductor thin films" Advisor: Prof. Hiroshi Kuratsuji

2003–2004 | *Doctoral exchange program* at Université Paris-Sud 11, Orsay, France

Mar. 2002 | *Master of Science* in Physics, Ritsumeikan University, Kyoto, Japan

Mar. 2000 | *Bachelor of Science* in Physics, Ritsumeikan University, Kyoto, Japan

Awards

2018 | Invited as long-term visitor in KITP Program "Physics of Dense Suspensions"

2015 | The Society of Rheology Publication Award

Grants and Scholarships

2022–2025 | National Natural Science Foundation of China,
Project Number: 12174390, 62w RMB

2022–2023 | National Natural Science Foundation of China (Research Fund for International Scientists),
Project Number: 12150610463, 80w RMB

2017–2019 | JSPS KAKENHI Grants-in-Aid for Scientific Research (C),
Project Number: 17K05618, ¥3,900,000

Feb. 2015 | Visiting Researcher (invited) in the Department of Chemical and Biomolecular Engineering at the University of Melbourne, $6,400

2014 | CUNY Travel award (City University of New York), $1,000

2012–2013 | DFG SPP 1273 Kolloidverfahrenstechnik,
Contributed to proposal design and writing (PI: Prof. Heiko Briesen)

2006–2007 | French Government Scholarship for *postdoctoral fellowships*

2003–2004 | Scholarship for French-Japan *doctoral exchange* program

Organization and Service

2014 | Stream organizer: 6th Pacific Rim Conference on Rheology, Melbourne, Australia

Scientific Publications

Journal Articles (Peer-Reviewed)

1. C. Ness, **R. Seto**, and R. Mari, The physics of dense suspensions, under review, Annu. Rev. Condens. Matter Phys, 2022. (in press)
2. Z. Zhao, B. Wang, S. Komura, M. Yang, F. Ye, **R. Seto**, Emergent Stripes of Active Rotors in Shear Flows, Phys. Rev. Research, 2022. (in press)
3. G G. Giusteri, **R. Seto**, Shear jamming and fragility of suspensions in a continuum model with elastic constraints, *Phys. Rev. Lett.*, 127:138001, 2021
4. J. T. Jenkins, R. Seto, and L. La Ragione. Predictions of microstructure and stress in planar extensional flows of a dense viscous suspension. *J. Fluid Mech.*, 912:A27, 2021.
5. A. Singh, C. Ness, **R. Seto**, J. J. de Pablo, and H. M. Jaeger. Shear thickening and jamming of dense suspensions: The "roll" of friction. *Phys. Rev. Lett.*, 124:248005, 2020.
6. R. Mari and **R. Seto**, Force transmission and the order parameter of shear thickening, *Soft Matter*, 15:6650–6659, 2019.
7. **R. Seto**, A. Singh, B. Chakraborty, M. M. Denn, and J. F. Morris, Shear jamming and fragility in dense suspensions, *Granular Matter*, 21(3):82, 2019.
8. K. Nagasawa, T. Suzuki, **R. Seto**, M. Okada, Y. Yue, Mixing Sauces: A Viscosity Blending Model for Shear Thinning Fluids, *ACM Trans. Graph.*, 38(4):95:1–17, 2019. **SIGGRAPH2019**
9. **R. Seto** and G. G. Giusteri, Normal stress differences in dense suspensions, *J. Fluid Mech.*, 857:200–215, 2018.
10. G. G. Giusteri and **R. Seto**. A theoretical framework for steady-state rheometry in generic flow conditions. *J. Rheol.*, 62(3):713–723, 2018.
11. **R. Seto**, G. G. Giusteri, and A. Martiniello. Microstructure and thickening of dense suspensions under extensional and shear flows. *J. Fluid Mech.*, 825, R3, 2017.
    ⋆ *Featured in* **Focus on Fluids**, *'Shear thickening' in non-shear flows: the effect of microstructure*
12. A. T. Pham, **R. Seto**, J. Schönke, D. Y. Joh, A. Chilkoti, E. Fried, and B. B. Yellen. Crystallization kinetics of binary colloidal monolayers. *Soft Matter*, 12:7735–7746, 2016.
13. R. Mari, **R. Seto**, J. F. Morris, and M. M. Denn. Discontinuous shear thickening in Brownian suspensions by dynamic simulation. *Proc. Natl. Acad. Sci. USA*, 112(50):15326–15330, 2015.
14. R. Mari, **R. Seto**, J. F. Morris, and M. M. Denn. Nonmonotonic flow curves of shear thickening suspensions. *Phys. Rev. E*, 91:052302, 2015.
15. R. Mari, **R. Seto**, J. F. Morris, and M. M. Denn. Shear thickening, frictionless and frictional rheologies in non-Brownian suspensions. *J. Rheol.*, 58(6):1693–1724, 2014.
    ⋆ *Received the 2015 Society of Rheology* **Publication Award**
16. **R. Seto**, R. Mari, J. F. Morris, and M. M. Denn. Discontinuous shear thickening of frictional hard-sphere suspensions. *Phys. Rev. Lett.*, 111:218301, 2013.
    ⋆ *Featured as* **Editors' Suggestion** *and highlighted in* **Physics Viewpoint**, *Friction's Role in Shear Thickening*
17. J. Wenzl, **R. Seto**, M. Roth, H.-J. Butt, and G. K. Auernhammer. Measurement of rotation of individual spherical particles in cohesive granulates. *Granul. Matter*, 15(4):391–400, 2013.
18. **R. Seto**, M. Meireles, R. Botet, G. K. Auernhammer, and B. Cabane. Compressive consolidation of strongly aggregated colloidal gels. *J. Rheol.*, 57(5):1347–1366, 2013.
19. E. C. Schlauch, M. Ernst, **R. Seto**, H. Briesen, M. Sommerfeld, and M. Behr. Comparison of three simulation methods for colloidal aggregates in Stokes flow: Finite Elements, Lattice Boltzmann and Stokesian Dynamics. *Comput. Fluids*, 86:199–209, 2013.
20. **R. Seto**, R. Botet, G. K. Auernhammer, and H. Briesen. Restructuring of colloidal aggregates in shear flow: coupling interparticle contact models with Stokesian Dynamics. *Eur. Phys. J. E*, 35, 128, 2012.
21. **R. Seto**, R. Botet, and H. Briesen. Viscosity of rigid and breakable aggregate suspensions: Stokesian Dynamics for rigid aggregates. *Prog. Colloid Polym. Sci.*, 139:85–90, 2012.

22. **R. Seto**, R. Botet, and H. Briesen. Hydrodynamic stress on small colloidal aggregates in shear flow using Stokesian Dynamics. *Phys. Rev. E*, 84, 041405, 2011.
23. T. Hyouguchi, **R. Seto**, and S. Adachi. Overlooked degree of freedom in steepest descent method: steepest descent method corresponding to divergence-free WKB Method. *Prog. Theor. Phys.*, 122, 1347–1376, 2009.
24. T. Hyouguchi, **R. Seto**, and S. Adachi. Overlooked branch cut in steepest descent method: switching line and atomic domain. *Prog. Theor. Phys.*, 122, 1311–1346, 2009.
25. H. Kuratsuji, R. Botet, and **R. Seto**. Electromagnetic gyration: Hamiltonian dynamics of the Stokes parameters. *Prog. Theor. Phys.*, 117(2):195–217, 2007.
26. R. Botet, H. Kuratsuji, and **R. Seto**. Novel aspects of evolution of the Stokes parameters for an electromagnetic wave in anisotropic media. *Prog. Theor. Phys.*, 116, 285–294, 2006.
27. **R. Seto**, R. Botet, and H. Kuratsuji. Excess conductivity of high-Tc superconductor thin films: role of smooth doping disorder. *Phys. Rev. B*, 73, 012508, 2006.
28. **R. Seto**, H. Kuratsuji, and R. Botet. Resonant oscillations of the Stokes parameters in non-linear twisted birefringent media, *Europhys. Letters*, 71, 751–756, 2005.
29. T. Hyouguchi, **R. Seto**, M. Ueda, and S. Adachi. Divergence-free WKB method. *Ann. Phys.*, 312, 177–267, 2004.

Journal Articles (Non Peer-Reviewed)

1. **R. Seto**, R. Mari, J. F. Morris, and M. M. Denn. The essential role of frictional contact in shear thickening. *Japanese J. Multiphase Flow*, Vol. 28, No. 3, 296–303, 2014.

Conference Proceedings

1. R. Botet, B. Cabane, M. Clifton, M. Meireles, and **R. Seto**. How a colloidal paste flows–scaling behaviors in dispersions of aggregated particles under mechanical stress. 5th Int. Workshop on Complex Systems, *AIP Conf. Proc.*, 982, 320–325, 2008.
2. **R. Seto**, H. Kuratsuji, R. Botet. Nonlinear oscillation of the Stokes parameters in birefringent media. *Topology in ordered phases: Proc. 1st Int. Symposium on Top 2005*, Sapporo, Japan, 327–331, 2006.

Book Chapter

1. V. Bürger, E. Schlauch, V. Becker, **R. Seto**, M. Behr, and H. Briesen. Simulating the restructuring of colloidal aggregates. M. Kind, W. Peukert, H. Rehage, and H. P. Schuchmann, editors, *Colloid Process Engineering*, 145–173. Springer International Publishing, 2015.

Last updated: December 29, 2021