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Time resolved lateral dynamic force microscopy for exploring nanoscopic water bridge JONGWOO KIM, Center for nano-liquid, School of Physics and Astronomy, Seoul National University Team, SUNGJIN CHANG, Center for nano-liquid and Center for THz-Bio Application Systems, School of Physics, Seoul National University Team, BAEKMAN SUNG, SOYOUNG KWON, Center for nano-liquid, School of Physics and Astronomy, Seoul National University Team, GUN-SIK PARK, Center for THz-Bio Application Systems, School of Physics and Astronomy, Seoul National University Team, WONHO JHE, Center for nano-liquid, School of Physics and Astronomy, Seoul National University Team, SCHOOL OF PHYSICS AND ASTRONOMY, SEOUL NATIONAL UNIVERSITY TEAM — Lateral dynamic force microscopy based on time-resolved scheme is employed for a good understanding of dynamics of nanoscopic water bridge connecting a sharp tip with a flat sample. In its formation and stepped compression at which the tip and the sample in a true non-contact, the nanoscopic water bridge under oscillatory shear stress shows a transient response behavior for a long time ($\geq 10^2$ ms). This observation obviously demonstrates that an inadequate fast measurement in dynamic force microscopy can lead a misunderstanding of dynamic physical properties of the nanoscopic water.

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