

**From Brownian Dynamics to Driven and Active Dynamics of Colloids:
Energetics and Fluctuation**

(Tutorial #1)

Masaki Sano*

Department of Physics, The University of Tokyo, Japan

***Email of Presenting Author: sano@phys.s.u-tokyo.ac.jp**

Starting from a simple Brownian dynamics and energetics of a particle in isothermal condition, I will explain several interesting cases of nonequilibrium states of colloidal systems. Topics cover (1) violation of the fluctuation-response relation for driven system, (2) thermodiffusion in temperature gradient, and (3) active dynamics of colloids.