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[\[PDF \(344K\)\]](#) [\[References\]](#) [\[Supplementary Materials\]](#)**SERS Measurements of Magnetic Stretching Force-Induced *Trans-Gauche* Conformational Change**[Takeyoshi GOTO](#)¹⁾ and [Hitoshi WATARAI](#)¹⁾*1) Department of Chemistry, Graduate School of Science, Osaka University***(Received December 29, 2009)****(Accepted January 12, 2010)**

The effects of stretching forces on covalently bridged 3-mercaptopropanoic acid molecules between magnetic particles (MPs) and Ag nano-particles (NPs) were studied by surface-enhanced Raman scattering (SERS) spectroscopy. With an exertion of 100 pN per single MP, the intensity ratio of the C-S stretching vibrations for *trans-to-gauche* conformations was increased from 0.295 ± 0.008 to 0.69 ± 0.09 . From the experimental result, it was concluded that the magnetic forces increased the distance between the MP and the Ag NP surface, and induced a shift of the isomerization equilibrium to the *trans* conformation. The present approach is a new candidate for a dynamic force spectroscopy of conformational equilibria.

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