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A multi-valued nano-electromechanical switch[1] DONG HOON SHIN, Department of Physics, Ewha Womans University, Korea, HAKSEONG KIM, Korea Research Institute of Standards and Science, Korea, KIRSTIE MCALLISTER, MIRI SEO, SANG WOOK LEE, Department of Physics, Ewha Womans University, Korea — In the present work, graphene based multi-valued nano-electromechanical (NEM) switches are demonstrated. Suspended graphene can be elastically deformed without breaking owing to its extraordinarily high mechanical strength. As a result, NEM switches with multi-level contact electrodes exhibit multiple current stages without breaking as the gate voltage increases. The experimental results reveal that the numbers of current stage and contact electrode level are identical when the height differences between the levels are sufficiently small. The electrical and mechanical behavior of the multi-valued NEM switch will be discussed in detail.

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