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Photon-induced phase transitions of individual electronic phase separated domains in manganites strips HANXUAN LIN, KAI ZHANG, HAO LIU, TIAN MIAO, YANG YU, LIFENG YIN¹, JIAN SHEN², Fudan University — Effective photosensors should be built on materials whose properties depend sensitively on light. Manganites are one of the candidates, where light can trigger resistivity change by several orders of magnitude. Such dramatic change is often associated with photoinduced phase transitions of electronic phase separated (EPS) domains in manganites. Previous studies of the light effect all use macroscopic manganite samples, which consist of large numbers of EPS domains smearing out the photon-induced phase transitions. Here, we observe the signature of individual domains' photoinduced phase transition by macroscopic transport measurement of spatially confined manganites strips. Pronounced photon-induced resistivity jumps emerge in the warming process, which reveals the dynamics of the phase transitions of individual EPS domains upon interaction with light. Magnetic force microscope (MFM) has been used to investigate the mechanism of those resistivity jumps.

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