Title of the manuscript:

Electric-field-induced metal maintained by current of the Mott insulator Ca_2RuO_4

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The video shows an *ab*-plane of a Ca_2RuO_4 single crystal at 290 K. At the left and right ends, gold-plated regions for the electrical leads can be seen in different colour. Initially the crystal is in the Mott insulating state with short *c* axis and long *ab* axes (large *ab*-plane shown in the video). Immediately after an injection of an electric pulse with a duration of 100 ms, the firing timing of which is indicated in the video by “3-2-1-0 !”, the *ab*-plane immediately shrinks and the bulk of the crystal becomes metallic. After the pulse, the crystal stretches again to become a Mott insulator. The shrinking and stretching can be recognized easily near the left and right end of the video frame. The observed amount of shrinking and stretching of the linear dimension in the *ab*-plane, about 1%, is consistent with that measured by XRD under continuous voltage application. Thus, the tiny pulses are clearly inducing the whole bulk structural change associated with the electronic switching. The process can be cycled without breaking the crystals, as shown in the video. We demonstrated that it can be cycled more than one day, or more than 3,000 times, until we switch off the pulses. This is clearly a discovery of a novel phenomenon that a Mott insulator can exhibit.