

Correction to Oxygen Control of Atomic Structure and Physical Properties of SrRuO₃ Surfaces

[*ACS Nano* 2013, 7, 4403–4413. DOI: 10.1021/nn400923n]. Alexander Tselev,* P. Ganesh, Liang Qiao, Wolter Siemons, Zheng Gai, Michael D. Biegalski, Arthur P. Baddorf, and Sergei V. Kalinin

After experimentation with similar thin films and additional analysis of the STM images published in our paper in *ACS Nano* 2013, 7, 4403–4413, we have concluded that the features considered in the paper as RuO₂ surface termination at the step edges based on step height are instead a result of an imaging artifact resulting from so-called “tip doubling”. The artifact is illustrated in the figure below, which is a corrected version of Figure 2 of the mentioned paper. While tip

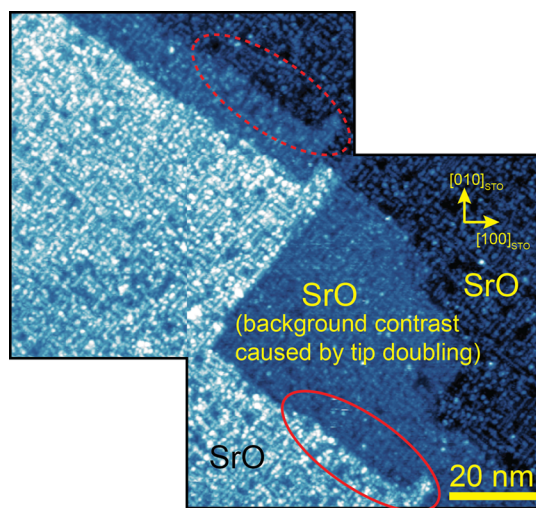


Figure. Illustration of the artifact in Figure 2 of the paper. Ellipses surround features along the step edge in the image, which look like copies of each other as a result of tip doubling.

doubling is frequently observed in experiments, on this particular occasion, “primary” and “secondary” tip apexes were separated by an unusually large distance of about 100 nm, which prevented immediate identification of this artifact. Figures 1 and 2 in the paper and Figure S2 in Supporting Information to the paper should be viewed taking this fact into account. While it was pointed out in the paper that the RuO₂ termination was observed with only one of the samples (in the last paragraph ending on p 4405), we now conclude that we did not observe RuO₂ termination in any of the samples.

Overall, this finding does not change other aspects in the interpretation of data, analysis, and the paper conclusions. However, the following portions of the text discussing the RuO₂ termination are incorrect or irrelevant in view of this finding: (1) left column on p 4405 starting with “there are signs” on line 15 from

the bottom and until the end of the paragraph; (2) right column on p 4405 starting with “However, in the imaged area” on line 7 from the top and until the end of the paragraph; (3) right column on p 4406 starting with “As was mentioned above” on line 8 from the bottom and until the end of the paragraph; (4) the sentence “The similarity of the zigzag and rectangular patterns found both on SrO- and RuO₂-terminated surfaces suggest that oxygen defects are at the root of these surface structures” on the second paragraph in the left column on p 4409; and (5) the sentence “Both SrO and RuO₂ surface terminations were found in images of one of the samples, with the RuO₂-termination covering a small fraction of the film surface along the step edges” in the Summary and Conclusions section on p 4410.

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