

RETRACTION

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rsc.li/materials-horizons**Retraction: Ambipolar operation of progressively designed symmetric bidirectional transistors fabricated using single-channel vertical transistor and electrochemically prepared copper oxide**Sung Hyeon Jung,^a Ji Sook Yang^a and Hyung Koun Cho^{*ab}Retraction of 'Ambipolar operation of progressively designed symmetric bidirectional transistors fabricated using single-channel vertical transistor and electrochemically prepared copper oxide' by Sung Hyeon Jung *et al.*, *Mater. Horiz.*, 2023, **10**, 1373–1384, <https://doi.org/10.1039/D2MH01413K>.

The Royal Society of Chemistry, with the agreement of the authors, hereby wholly retracts this *Materials Horizons* Communication due to concerns over reproducibility. This study represents the first attempt to fabricate semiconductor transistors using an electrochemical approach for oxide semiconductors, resulting in the production of ambipolar vertical transistors. Recently, when we repeated the fabrication of vertical transistors, we were unable to reproduce the results in the article. We became aware that the previous study had overlooked some reliability issues of semiconductor layers produced through electrochemical means as well as errors in the measurement methods used to prepare the results. The vertical structure significantly differs from the conventional planar structure in terms of channel configuration, requiring new considerations for the evaluation and calculation of the device's electrical characteristics. Regrettably, this aspect was not sufficiently taken into account, resulting in an overestimation of the most critical parameter in the transistor, which may have led to wrong results in the paper. We, as the authors of this *Materials Horizons* Communication, wish to retract this Communication.

Signed: Sung Hyeon Jung, Ji Sook Yang and Hyung Koun Cho, 10th October 2023.

Retraction endorsed by Michaela Mühlberg, Executive Editor, *Materials Horizons*.^a School of Advanced Materials Science and Engineering, Sungkyunkwan University (SKKU), 2066 Seobu-ro, Jangsan-gu, Suwon, Gyeonggi-do, 16419, Republic of Korea.
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