

# Chemical Vapor Deposition Synthesis of Two-dimensional Freestanding Transition Metal Oxychloride for Electronic Applications

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Appendix A X-ray diffraction characterization of the reactants

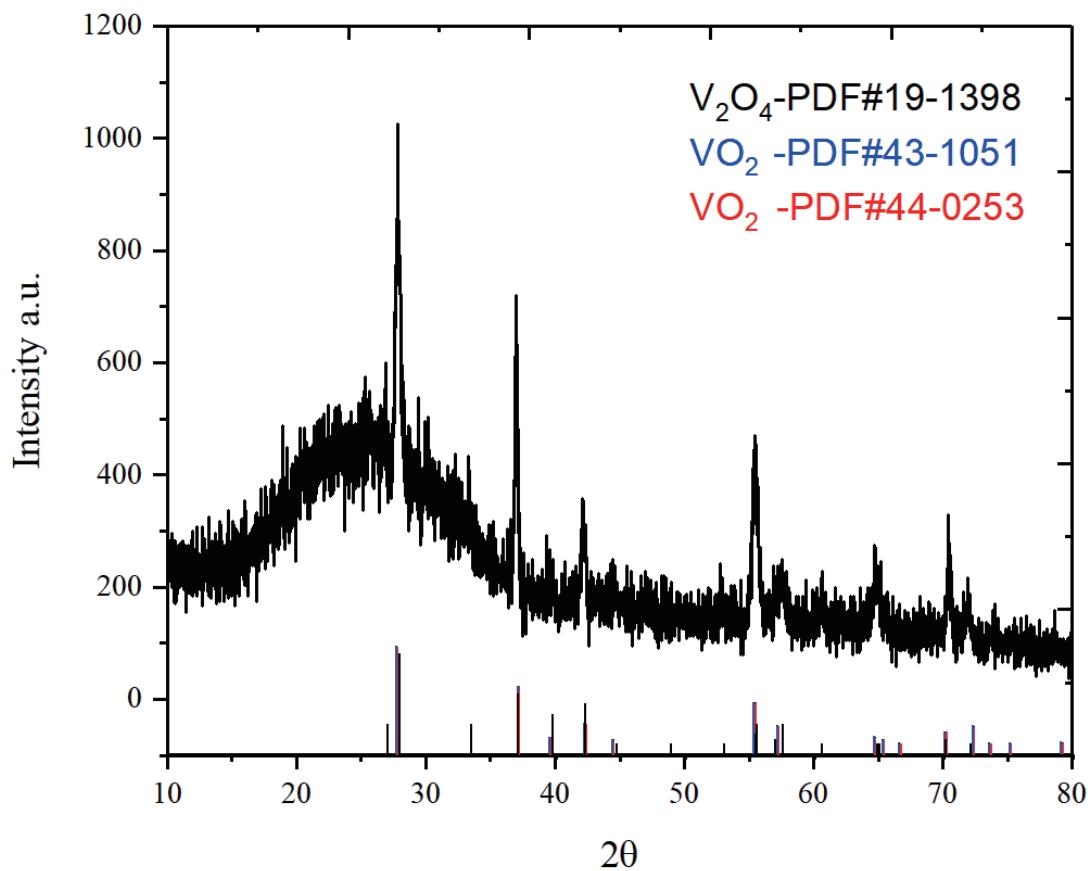
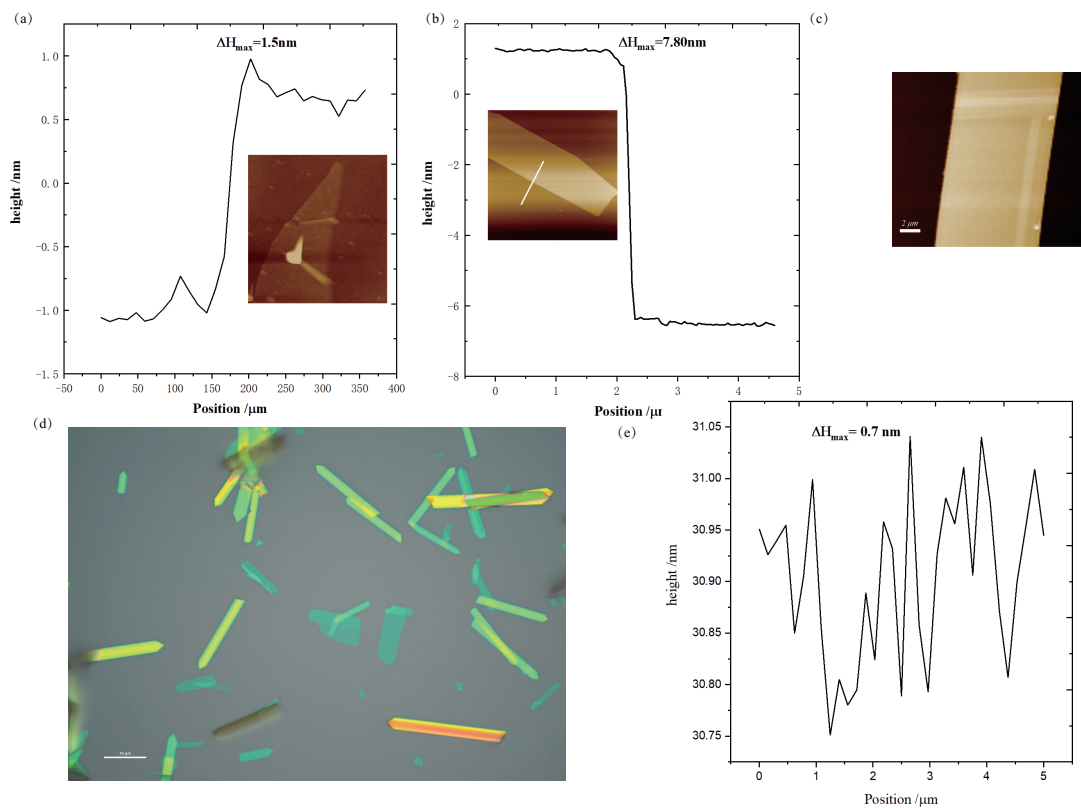


Figure A1 X-ray diffraction pattern of the reactants.

**Appendix B Atomic force microscopy characterization of as-grown VOCl flakes with various thickness.**

**Figure B1** (a), (b) & (c) AFM height profile of single crystals VOCl sample with 1.5, 7.8 & 57.5 nm, insets show corresponding AFM images; (d) optical images of various VOCl crystal, scale bar is 10 μm (e) surface roughness of VOCl crystal.

Appendix C Electrical characterizations of Au/VOCl/Au memristive devices

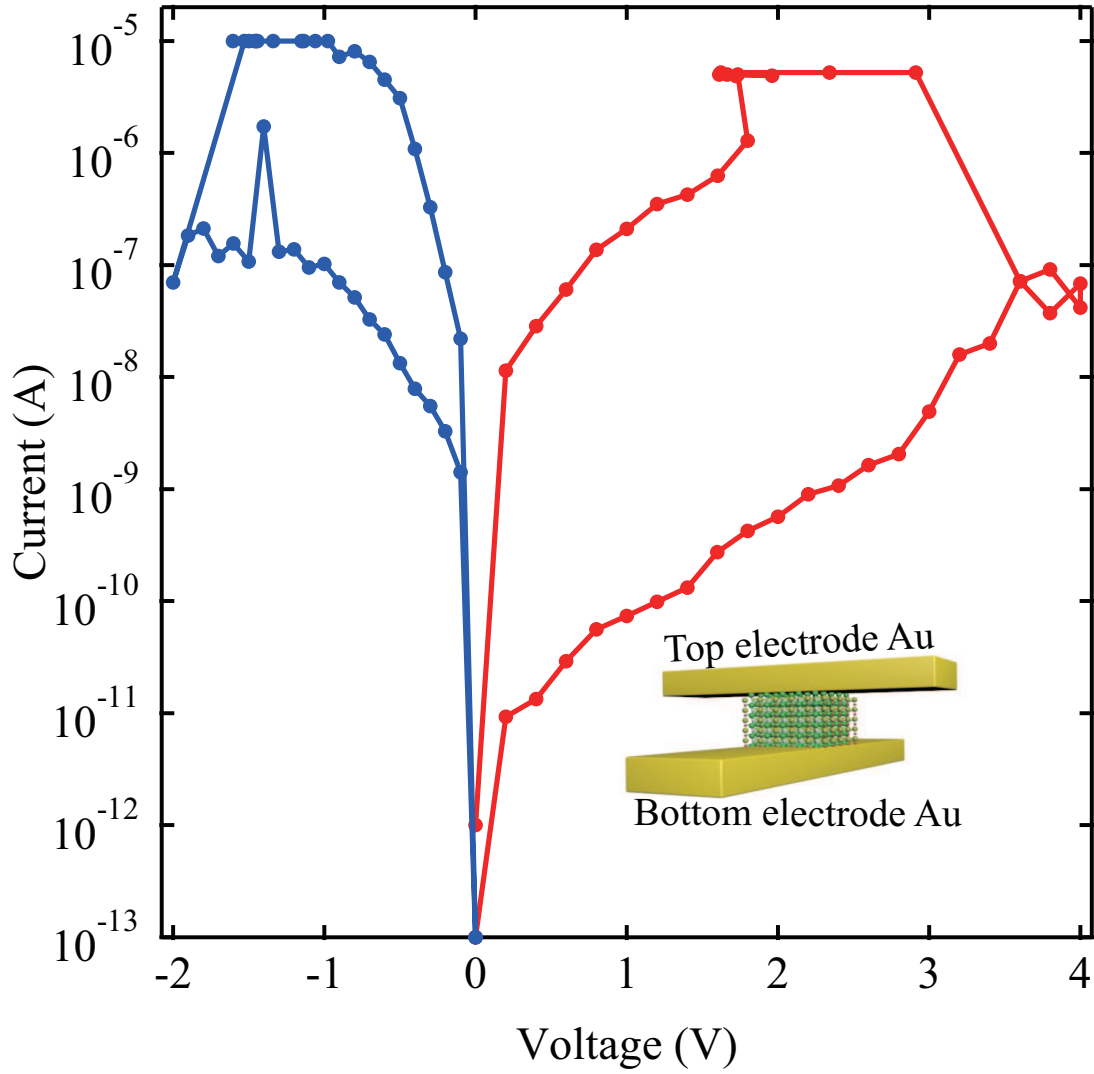


Figure C1 Typical I-V switching curve of Au/VOCl/Au memristive device.

Appendix D Switching variance of different VOCl based memristive devices.

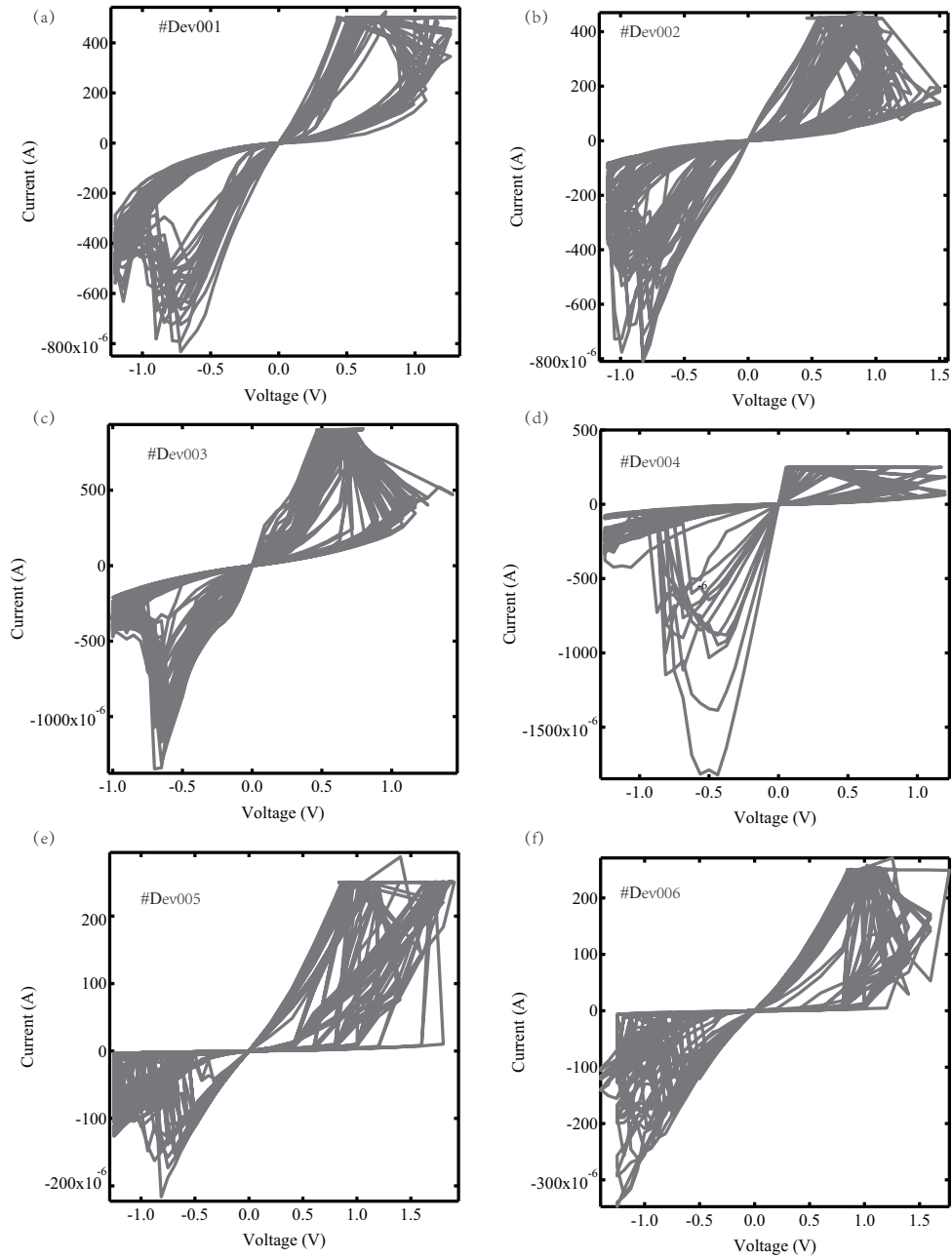
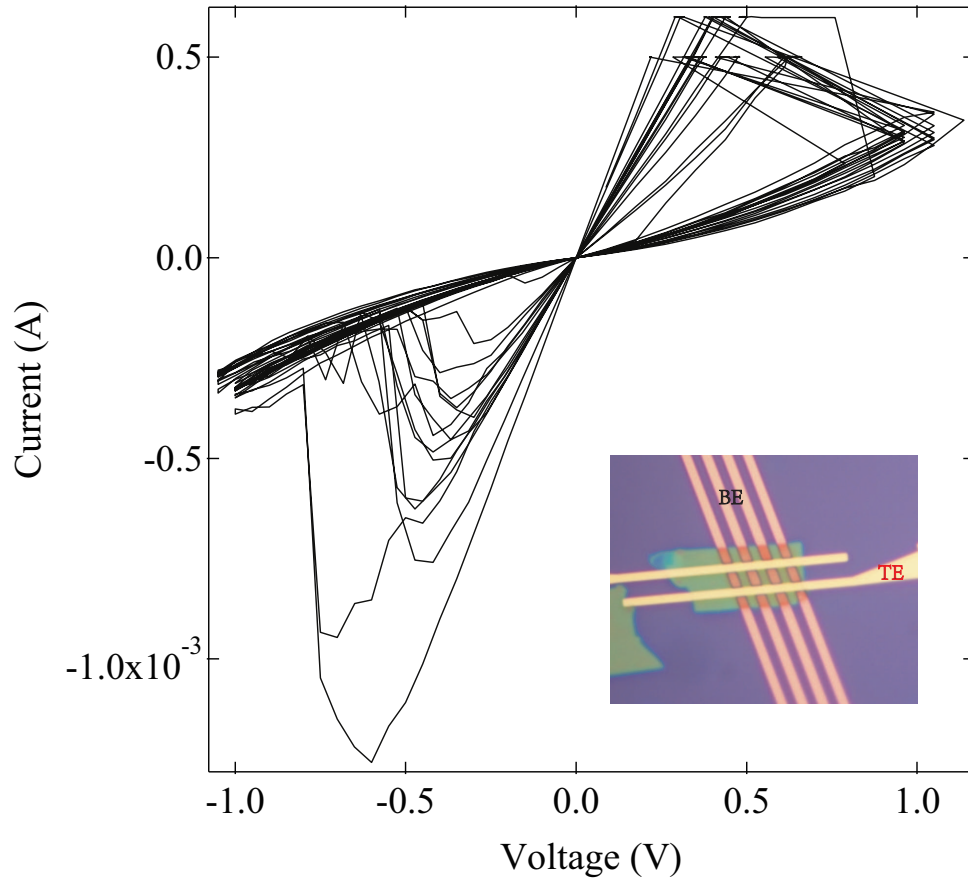


Figure D1 Switching curves of different VOCl-based memristive devices

Appendix E Switching curve of VOCl based memristive device



**Figure E1** Switching curve of VOCl based memristive device measured after three months. The inset show optical image of device (the same device used in figure 4f in the main manuscript).