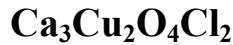


# Supporting information

## Orbital selection of the double [CuO<sub>2</sub>] layer compound



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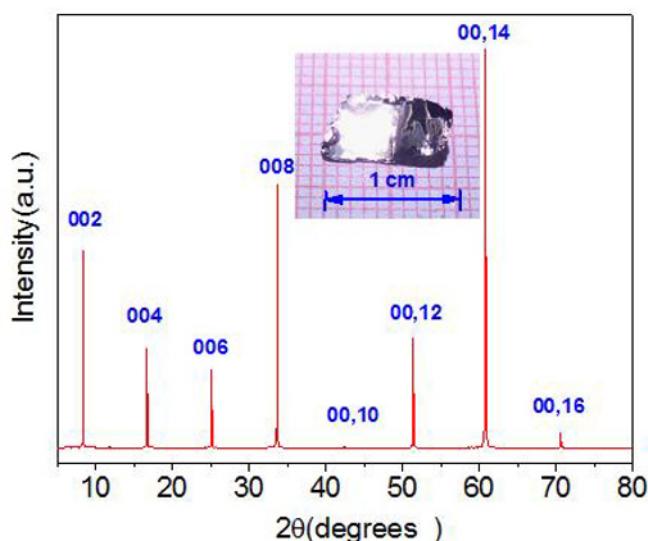
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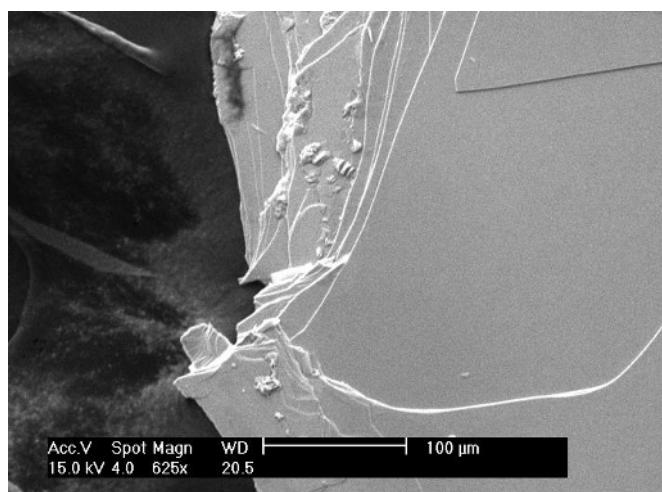
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**Figure S1** X-ray diffraction patterns along the *c*-axis of a  $\text{Ca}_3\text{Cu}_2\text{O}_4\text{Cl}_2$  single crystal.



**Figure S2** SEM image of a  $\text{Ca}_3\text{Cu}_2\text{O}_4\text{Cl}_2$  single crystal.