

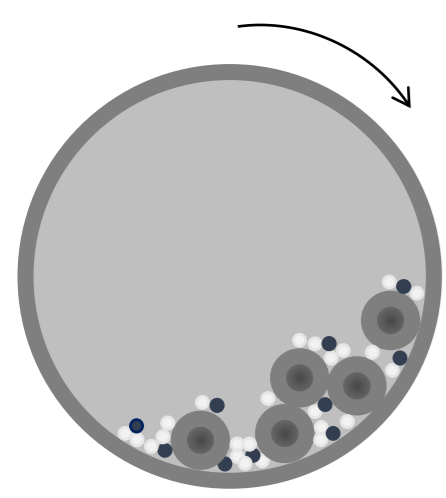
## High-energy ball milling strategies for the synthesis of Cu/TiO<sub>2</sub> catalysts

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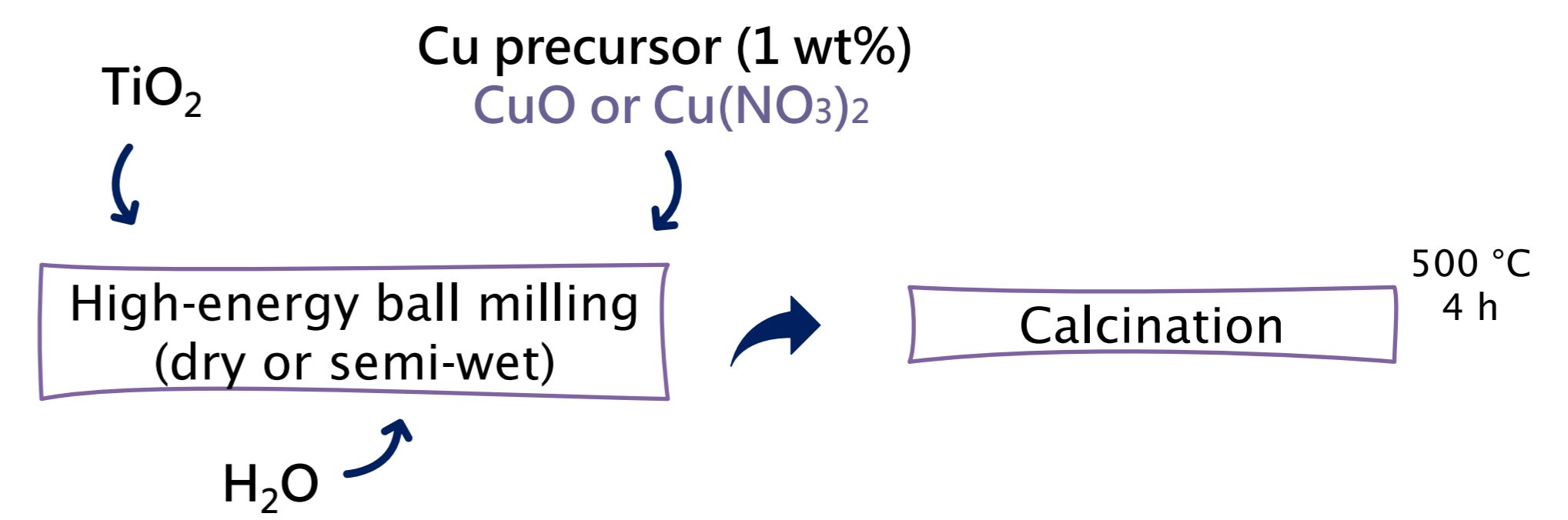
### INTRODUCTION & AIM



Mechanochemical activation outstands as an eco-friendly and cost-effective solid-state technique for the synthesis of a variety of materials

Useful strategy to obtain one-pot new catalysts with improved properties

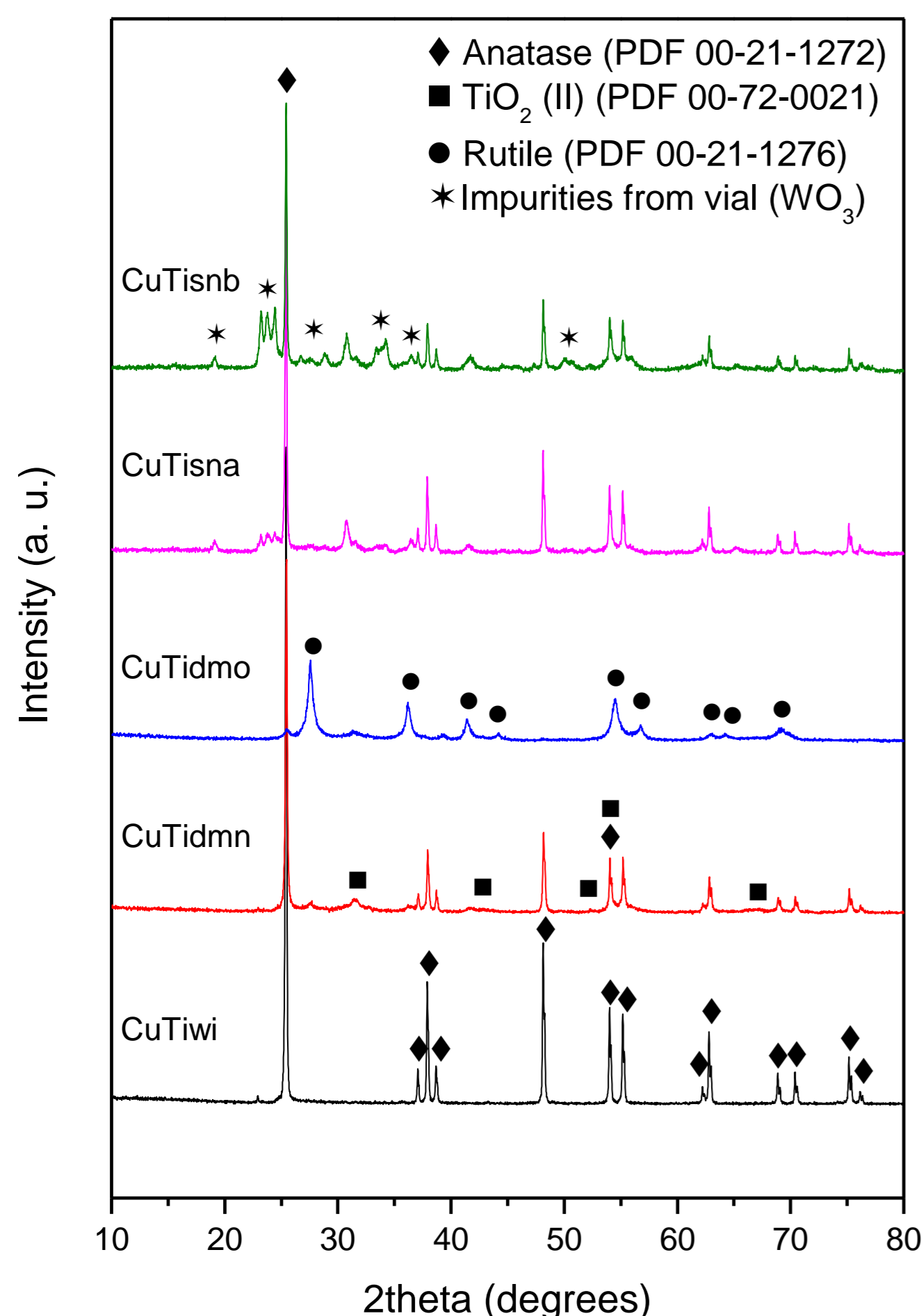
### METHODS



\*A catalyst prepared by wet-impregnation (wi) for comparison

Wet-impregnation: CuTiwi  
Dry-milling: CuTidmo; CuTidmn  
Semi-wet milling: CuTisna; CuTisnb

### RESULTS & DISCUSSION



➤  $S_{BET}$  from 9 to 13 m<sup>2</sup> g<sup>-1</sup>

➤ No signals of Cu species

High-dispersion

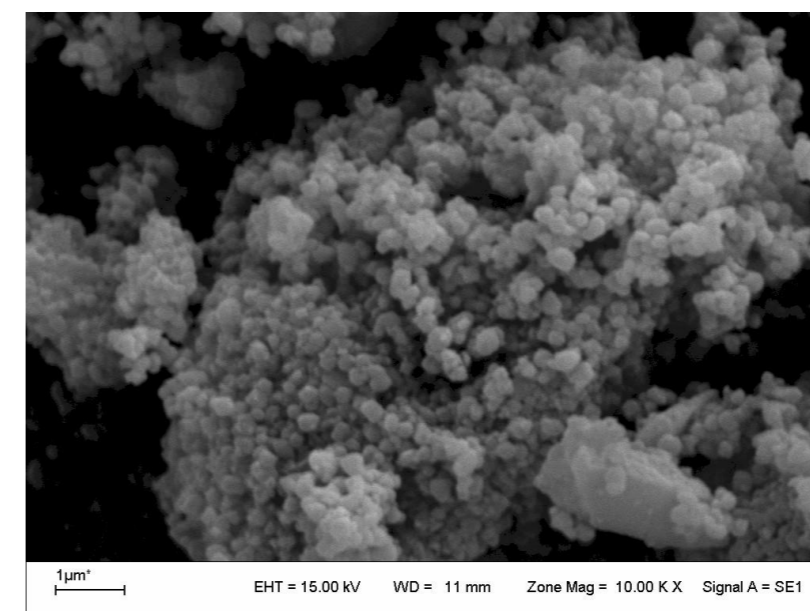
Mixture + impurities from WC vial

➤ Mostly rutile

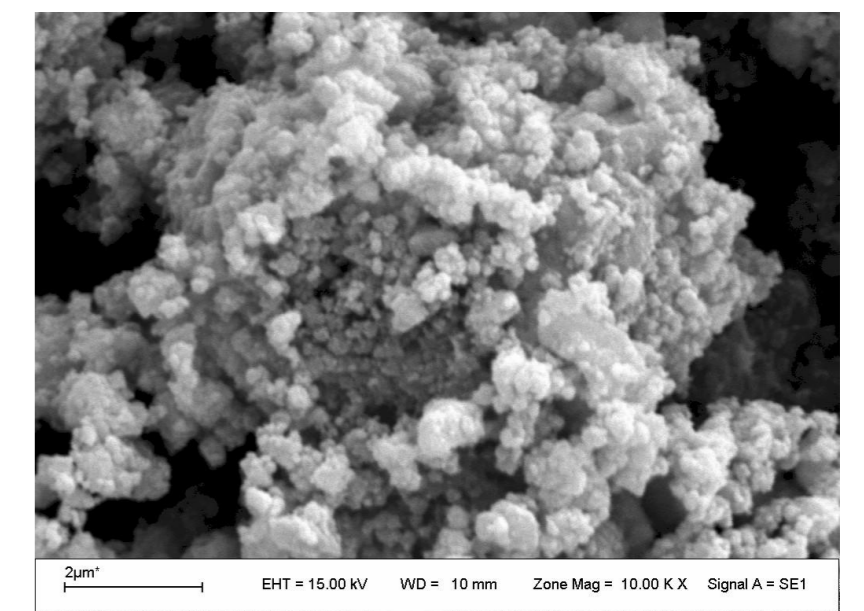
➤ Anatase + TiO<sub>2</sub> (II)

➤ Pristine anatase

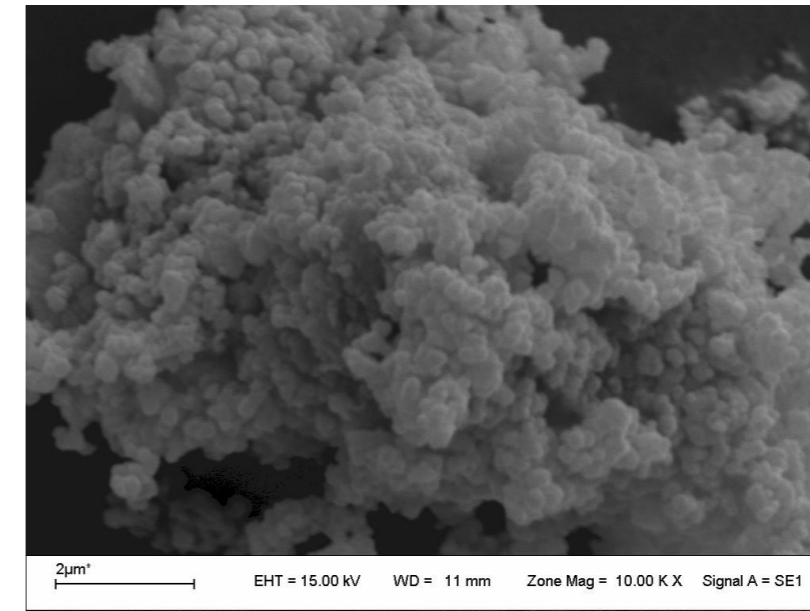
CuTidmn



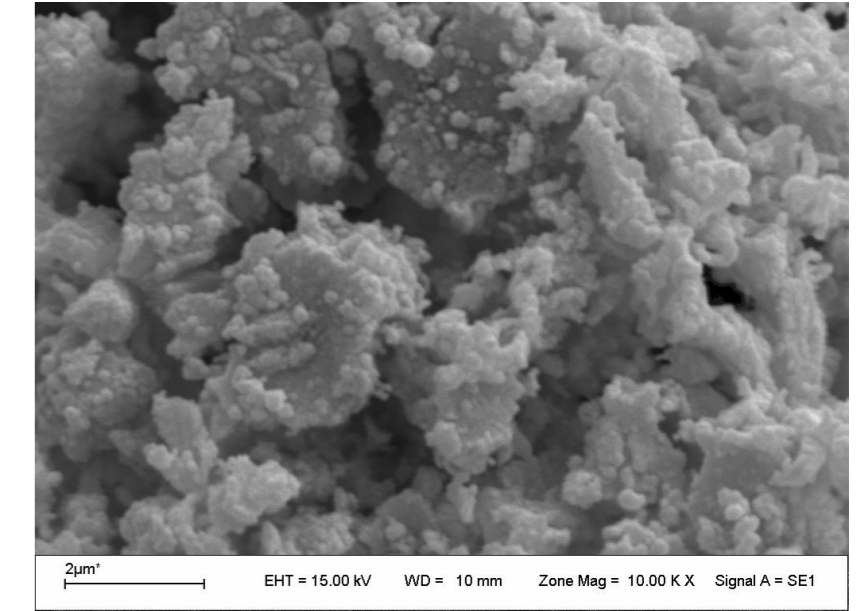
CuTidmo



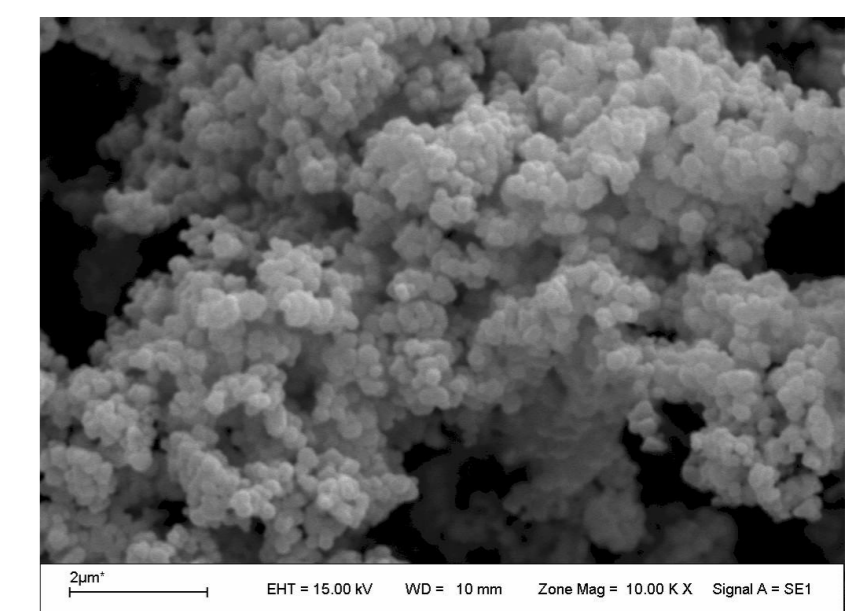
CuTisna



CuTisnb



CuTiwi



➤ Spherical morphology

➤ Cu wt% between 0.94 and 1.97 (EDS, semi-quantitative)

### CONCLUSION

Catalysts obtained by this green and one-pot process could be suitable for a variety of reactions, including CO<sub>2</sub> hydrogenation and glycerol valorization. A high dispersion of Cu species and the different titania polymorphs could play a crucial role.

### FUTURE WORK/REFERENCES

Catalysts are under a thorough characterization to investigate metal-support interactions and will be tested on a selected target reaction.

References:  
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