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Functionalization effect of multi-walled carbon nanotubes (MWCNTs) used as supports for Cu-based catalysts

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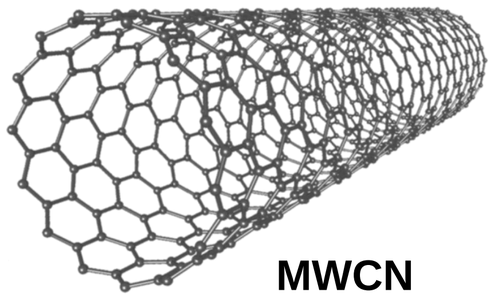
INTRODUCTION & AIM

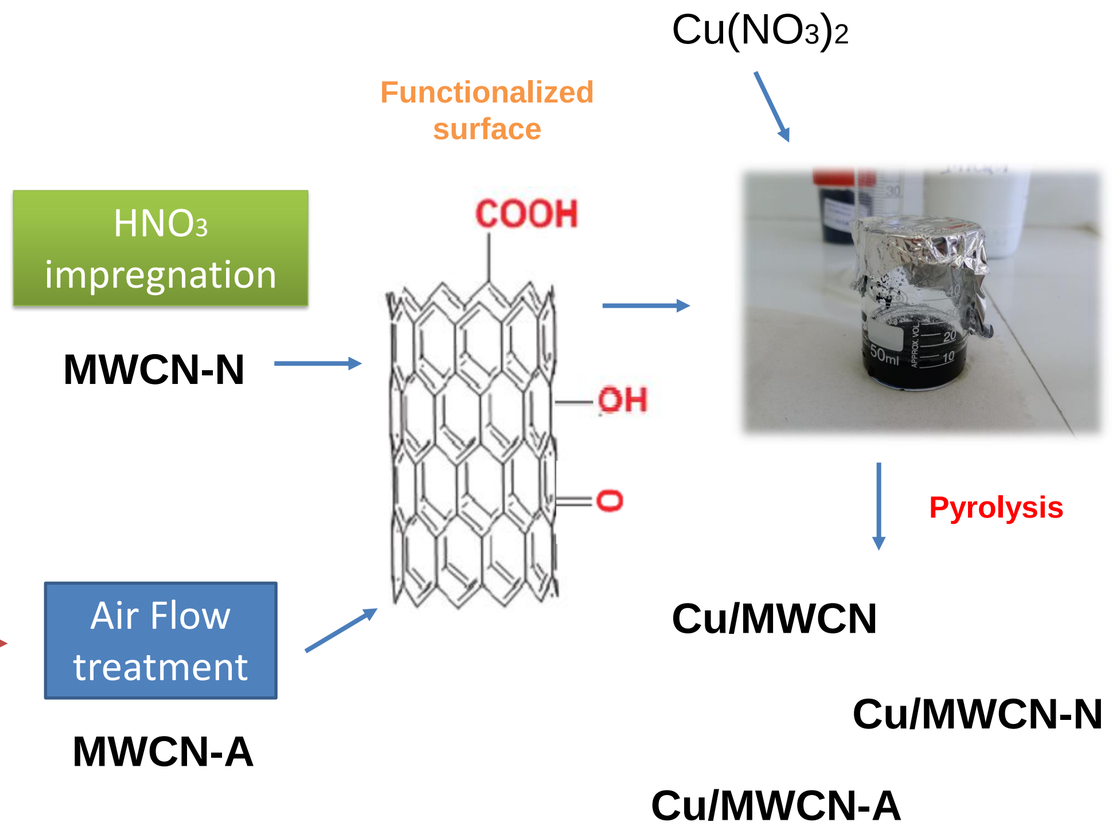
The present work proposes to study the effect of different functionalization strategies on the properties of multi-walled carbon nanotubes (MWCNTs) used as catalyst supports.



MWCN

Their surface chemistry can be easily modified

METHODS

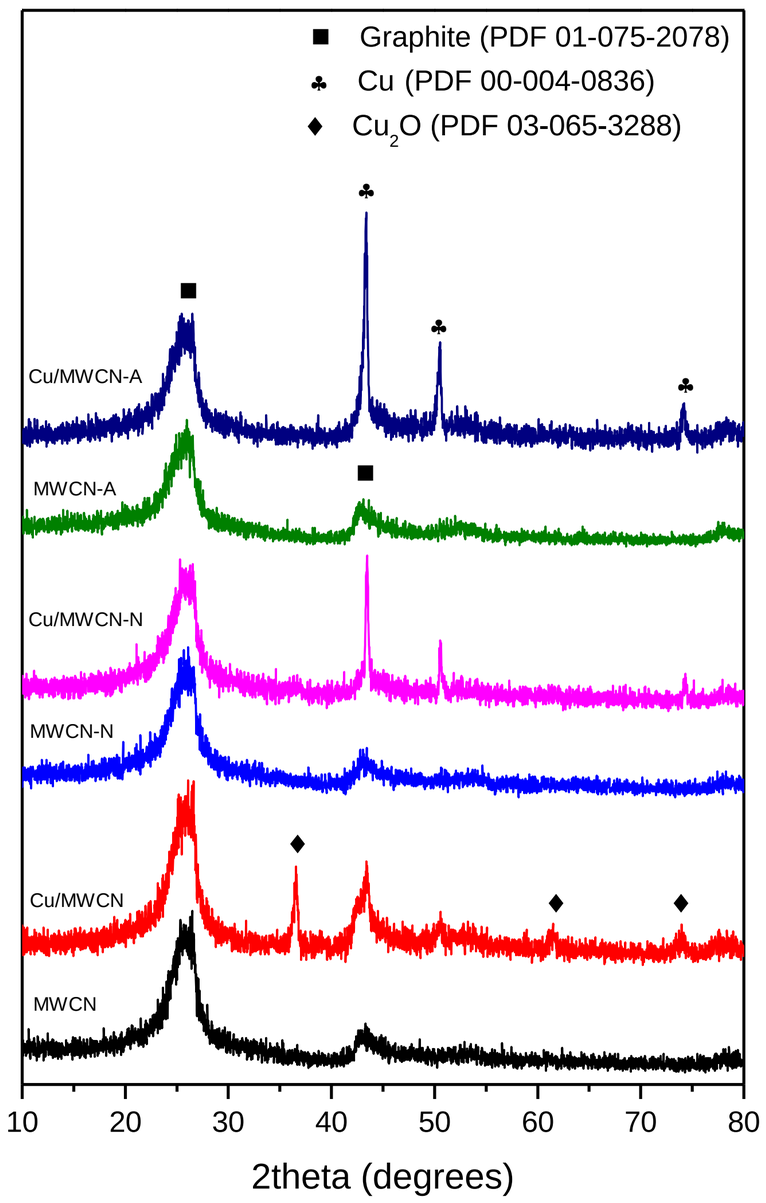


RESULTS & DISCUSSION

Specific surface area (S_{BET})

MWCN (243 $m^2 g^{-1}$)	**Cu/MWCN** (215 $m^2 g^{-1}$)
MWCN-N (237 $m^2 g^{-1}$)	**Cu/MWCN-N** (219 $m^2 g^{-1}$)
MWCN-A (220 $m^2 g^{-1}$)	**Cu/MWCN-A** (213 $m^2 g^{-1}$)

All S_{BET} values were in the order of pristine MWCN material, with a slight decrease due to thermal treatments and Cu impregnation, as expected



X-ray Diffraction (XRD)

-MWCN
-MWCN-N
-MWCN-A
Only graphite carbon signals were observed

- **Cu/MWCN**: Cu_2O signals were predominant. No incipient Cu^0 signals were detected.

- **Cu/MWCN-N**: Cu^0 signals were predominant. Smaller metal crystallites could be inferred.

- **Cu/MWCN-A**: Cu^0 signals were also predominant. Larger metal crystallites could be inferred.

Functionalization effect

CONCLUSION

Distinctive physicochemical properties achieved in the MWCNTs supports could be related to the nature of functionalization treatment applied, with their consequent effects on Cu particles size and speciation.

FUTURE WORK

Supports and catalysts are being further characterized and will be evaluated under different conditions of glycerol hydrogenolysis.