

# Water: Friend or Foe in Catalytic Hydrogenation? A Case Study Using Copper Catalysts

Alisa Govender <sup>1,2</sup>, Abdul S. Mahomed <sup>2</sup> and Holger B. Friedrich <sup>2,\*</sup>

<sup>1</sup> Group Technology, Research & Technology, Sasol South Africa (Pty) Ltd, 1 Klasië Havenga Road, Sasolburg, 1947, South Africa; e-mail@e-mail.com

<sup>2</sup> School of Chemistry and Physics, University of KwaZulu-Natal, Durban, 4041, South Africa; mahomeda1@ukzn.ac.za

\* Correspondence: Friedrich@ukzn.ac.za; Tel.: +xx-xxx-xxx-xxxx

## Supplementary information

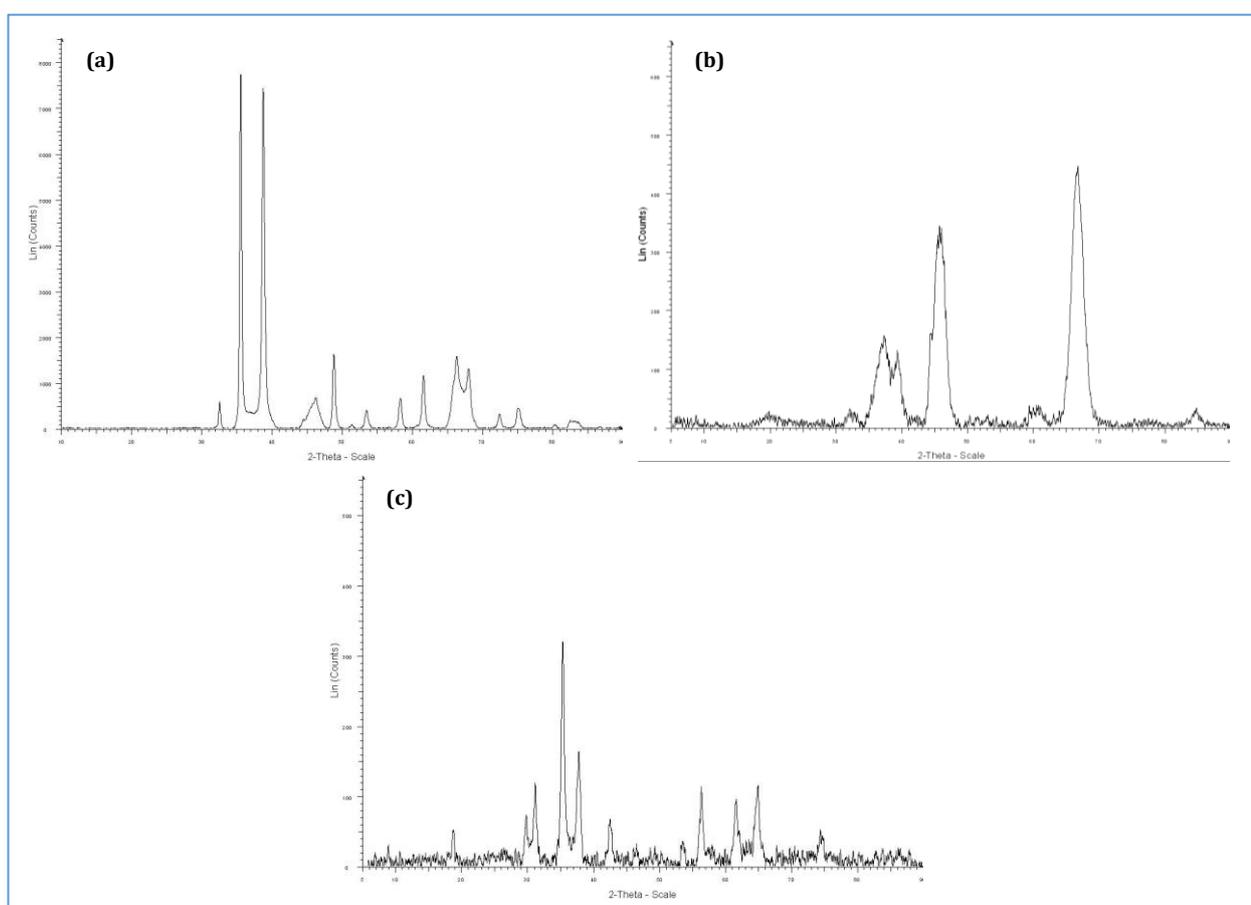
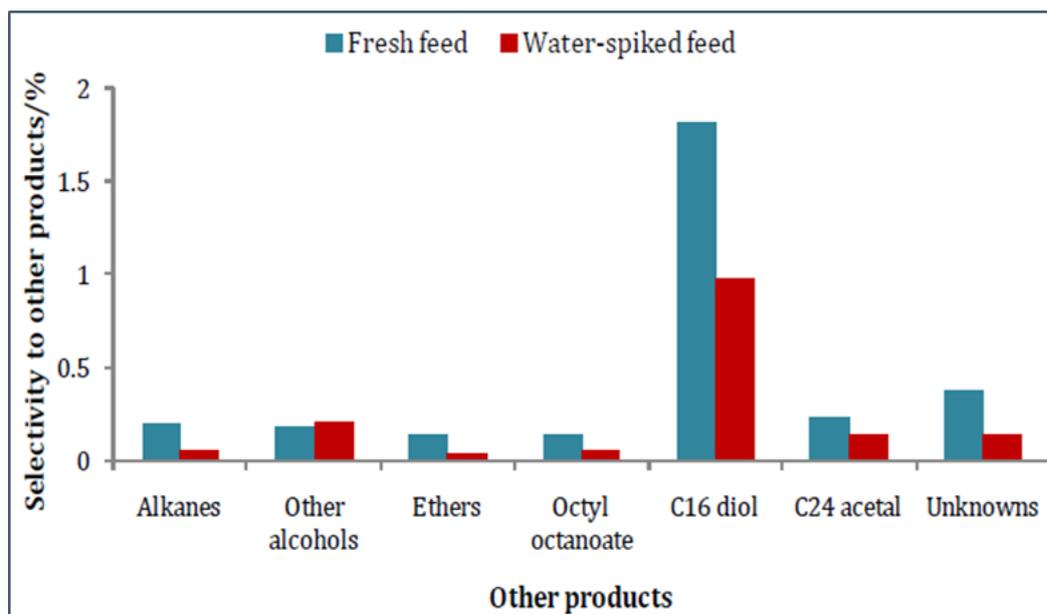
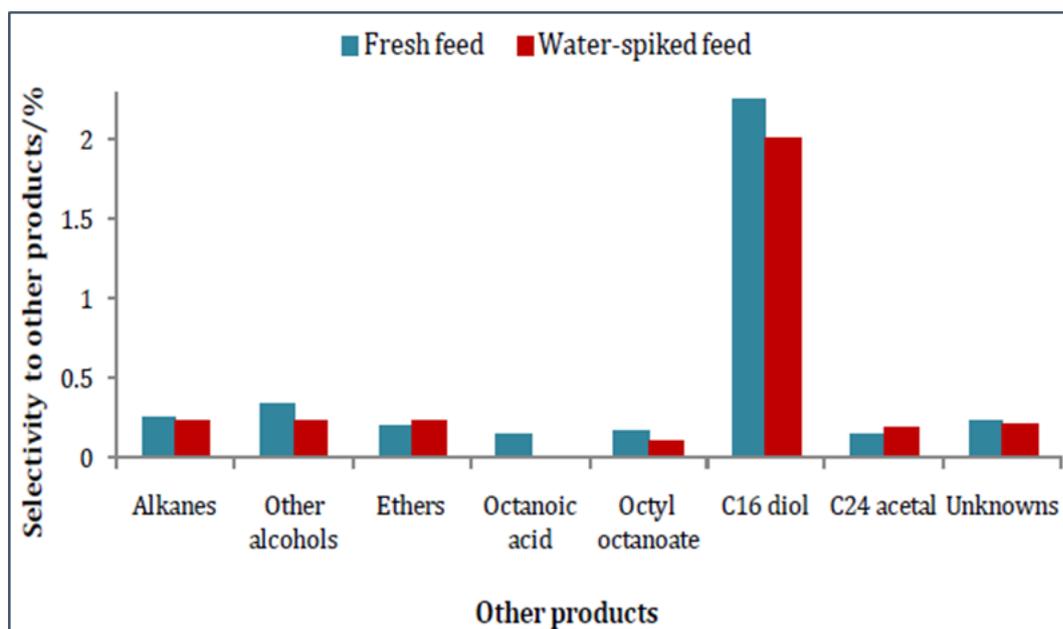


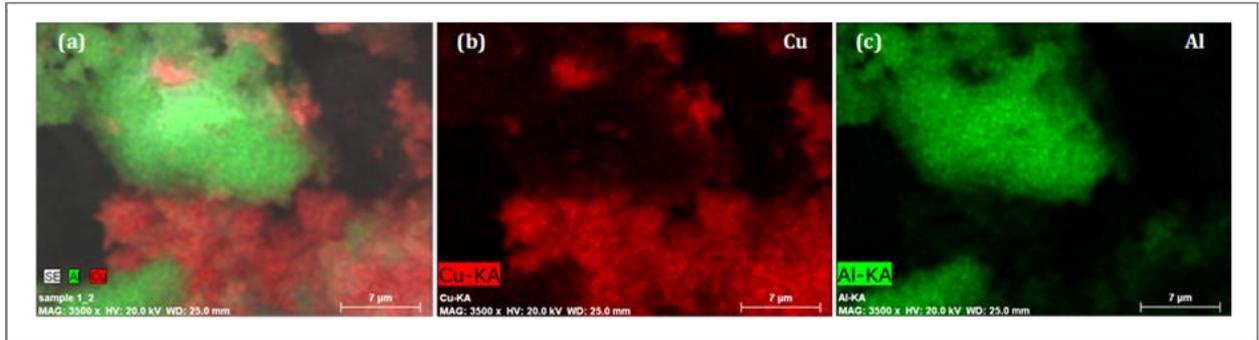
Figure S1: Diffractograms of (a) CuO/Al<sub>2</sub>O<sub>3</sub>; (b) the Al<sub>2</sub>O<sub>3</sub> support and (c) CuCr<sub>2</sub>O<sub>4</sub>



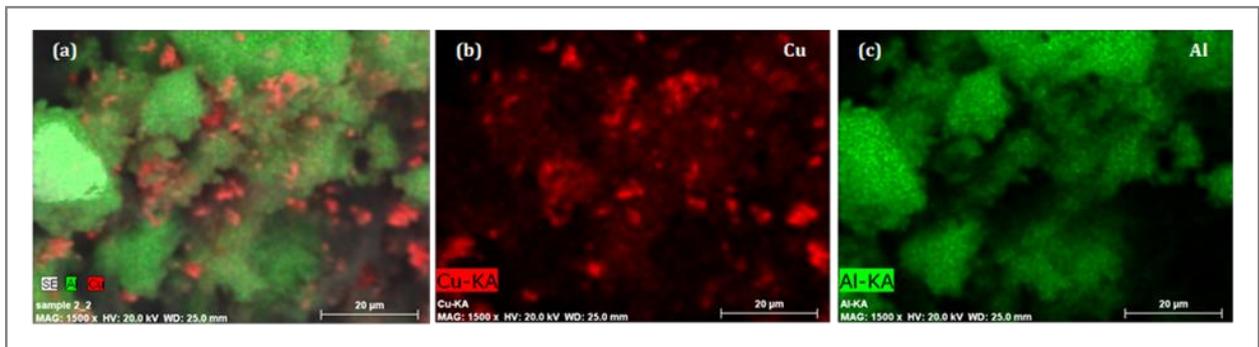
**Figure S2:** Selectivity to the various by-products formed during the hydrogenation of octanal using the fresh feed and the water-spiked feed over CuO/Al<sub>2</sub>O<sub>3</sub>



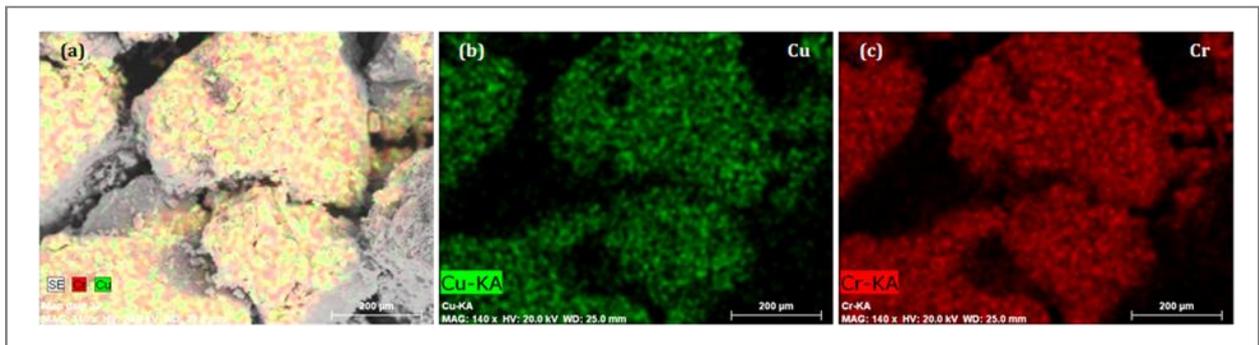
**Figure S3:** Selectivity to the various by-products formed during the hydrogenation of octanal using the fresh feed and the water-spiked feed over CuCr<sub>2</sub>O<sub>4</sub>



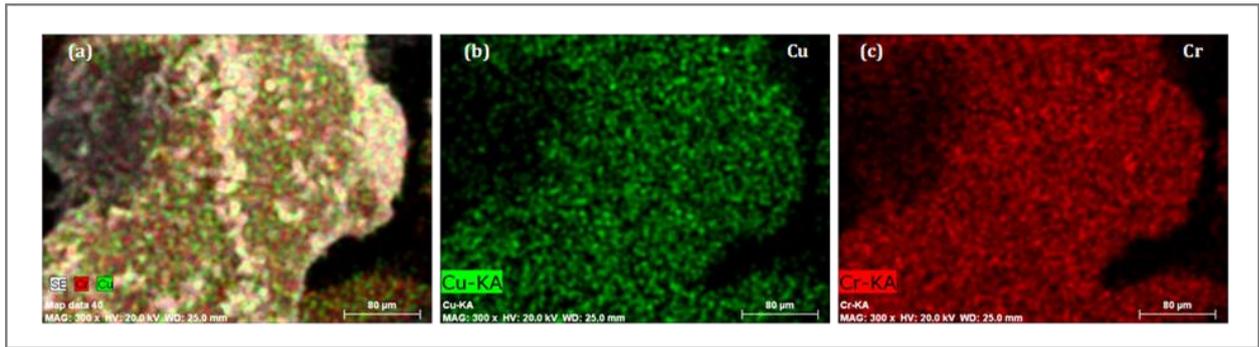
**Figure S4:** (a) – (c) EDS composition map data for Cu/Al<sub>2</sub>O<sub>3</sub> used for the reaction with fresh feed



**Figure S5:** (a) – (c) EDS composition map data for Cu/Al<sub>2</sub>O<sub>3</sub> used for the reaction with water-spiked feed



**Figure S6:** (a) – (c) EDS composition map data for CuCr<sub>2</sub>O<sub>4</sub> used for the reaction with fresh feed



**Figure S7:** (a) – (c) EDS composition map data for  $\text{CuCr}_2\text{O}_4$  used for the reaction with water-spiked feed

