Supplementary materials

Effect of Sn Doping on Pd Electro-catalysts for Enhanced Electro-catalytic Activity Towards Methanol and Ethanol Electro-oxidation in Direct Alcohol Fuel Cells

Cyril. T. Selepe[1], Sandile. S. Gwebu[1], Thabo. Matthews[1], Tebogo. A. Mashola[1], Ludwe. L. Sikeyi[2], Memory. Zikhali[1] and Nobanathi. W. Maxakato[1]

[1] Department of Chemical Sciences, University of Johannesburg, Doornfontein 2028, South Africa.
[2] Molecular Sciences Institute, School of Chemistry, University of the Witwatersrand, Braamfontein 2050, South Africa;
* Correspondence: nmaxakato@uj.ac.za; Tel.: +27 (0) 11 559 6151

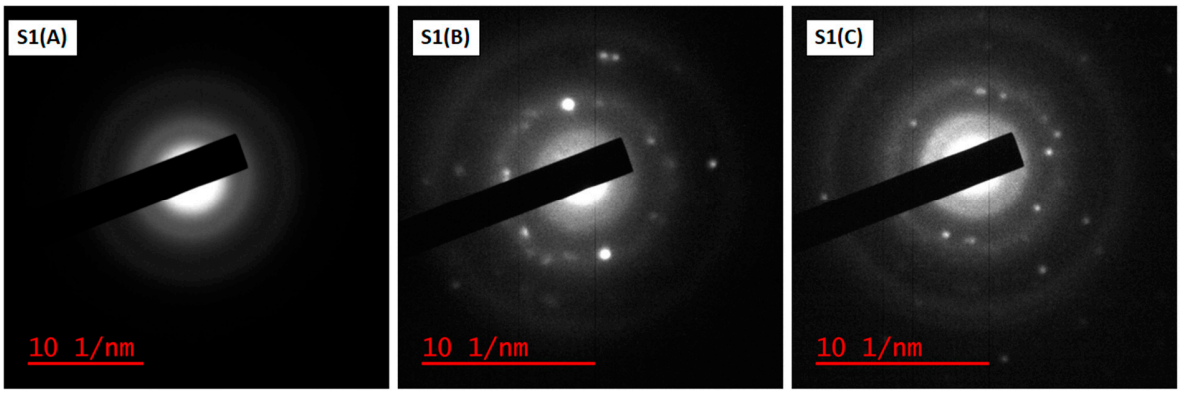


Figure S1 Shows selected area electron diffraction pattern of carbon nano-onions (A), Pd/C (B) and Pd-Sn/CNOs (C) electro-catalysts.

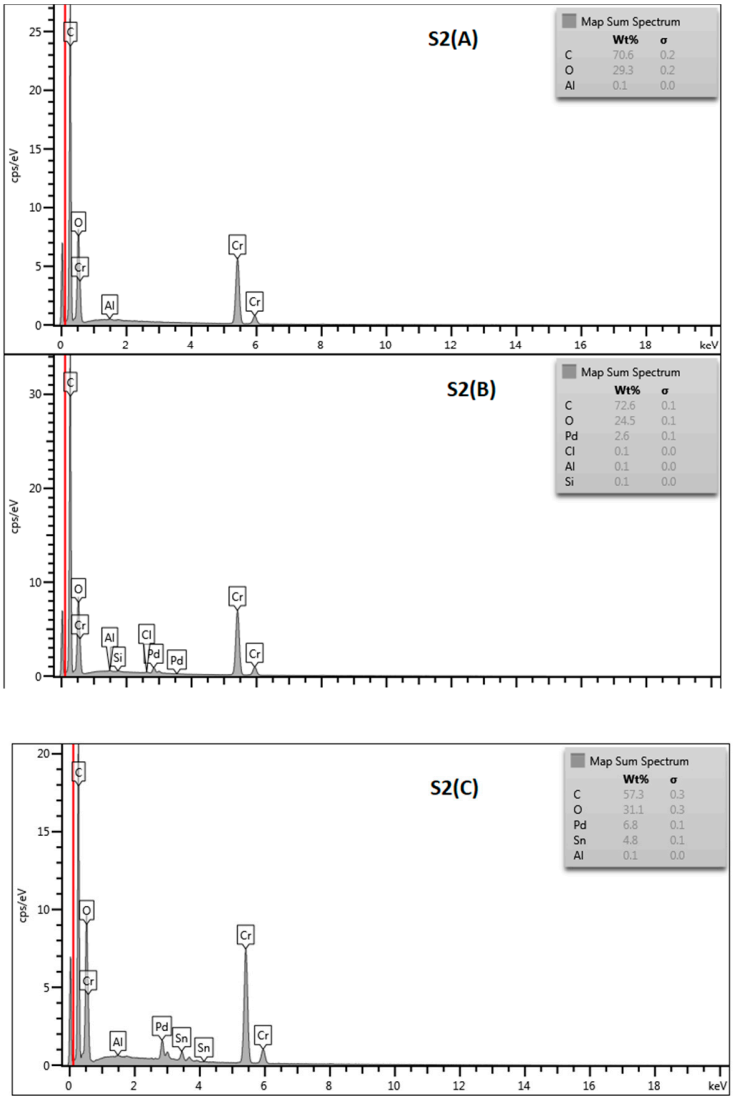
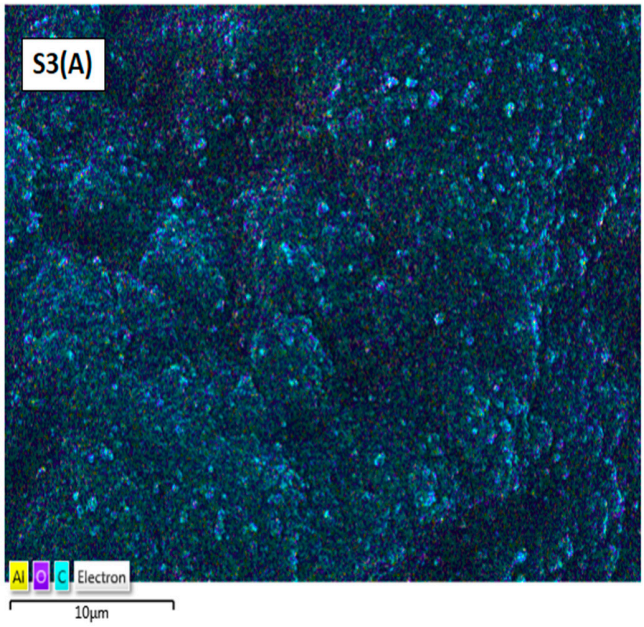
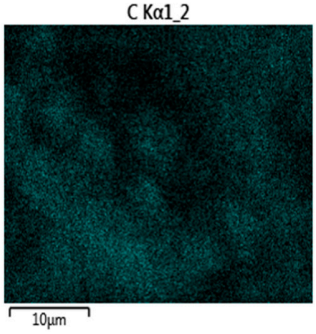


Figure S2: depicts the EDX spectrum of carbon nano-onions support (A), Pd/CNOs (B) and Pd-Sn/CNOs (C) electro-catalysts.

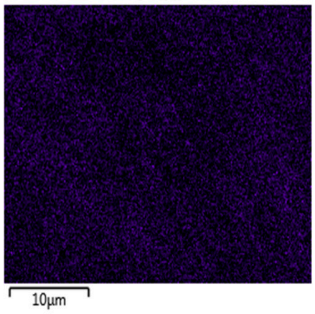
EDS Layered Image 6



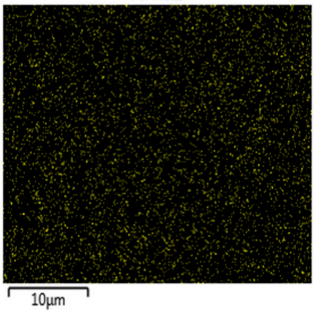
C Kα1_2



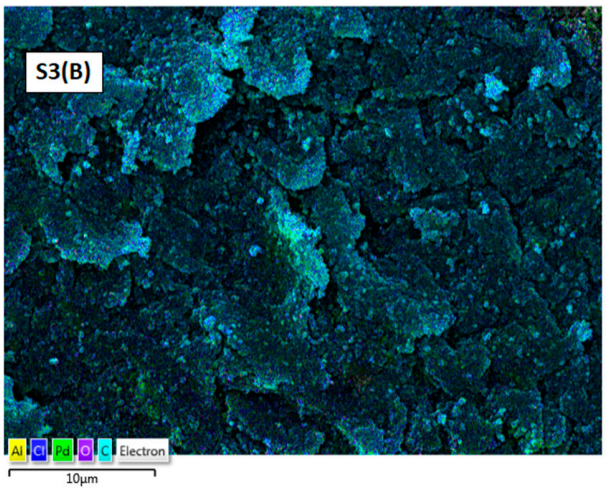
O Kα1



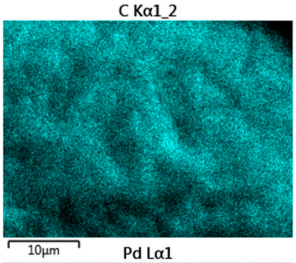
Al Kα1



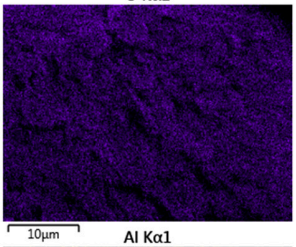
EDS Layered Image 4



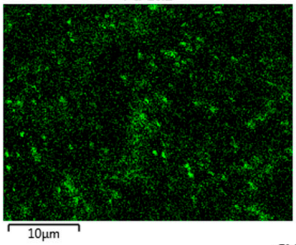
C Kα1_2



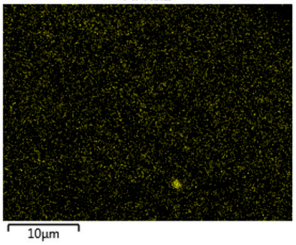
O Kα1



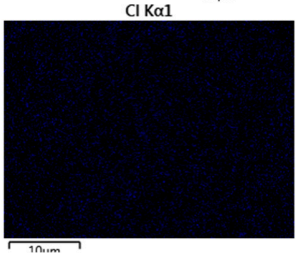
Pd Lα1



Al Kα1



Cl Kα1



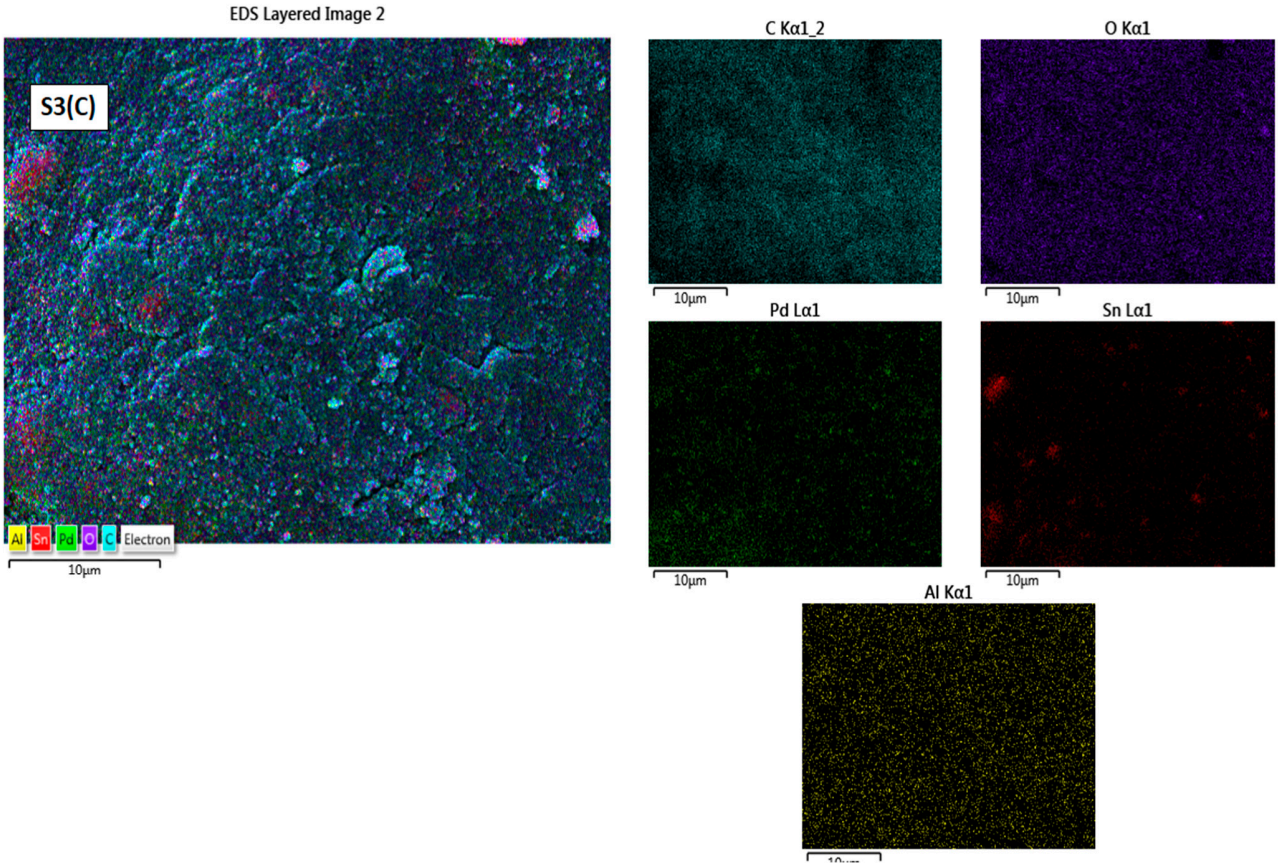


Figure S3: shows the elemental mapping of carbon nano-onions support (A), Pd/CNOs (B) and Pd-Sn/CNOs (C) electro-catalysts.

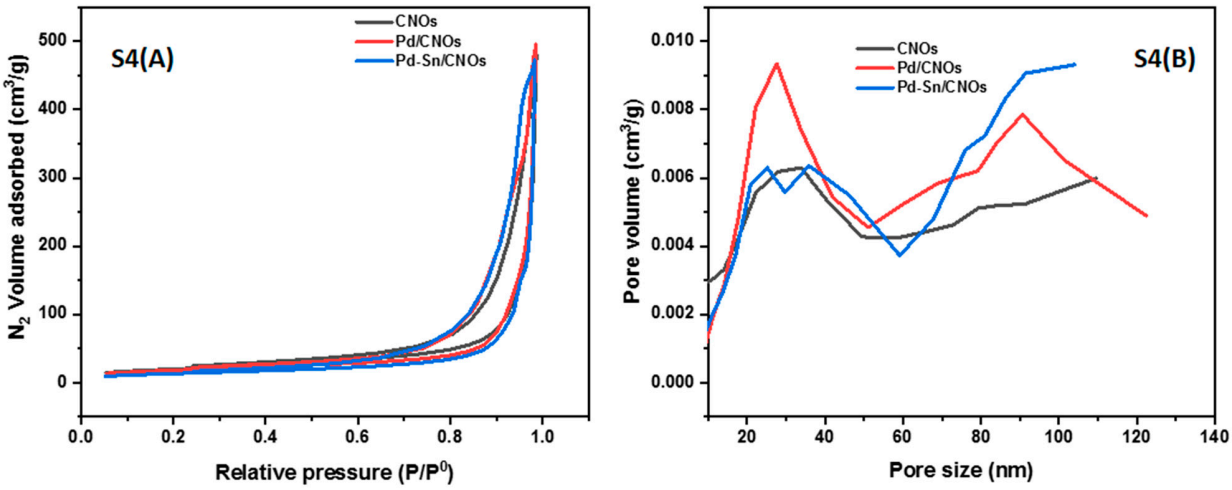


Figure S4: Shows the N_2 adsorption-desorption isotherms (A) and BJH desorption pore-size distribution (B).

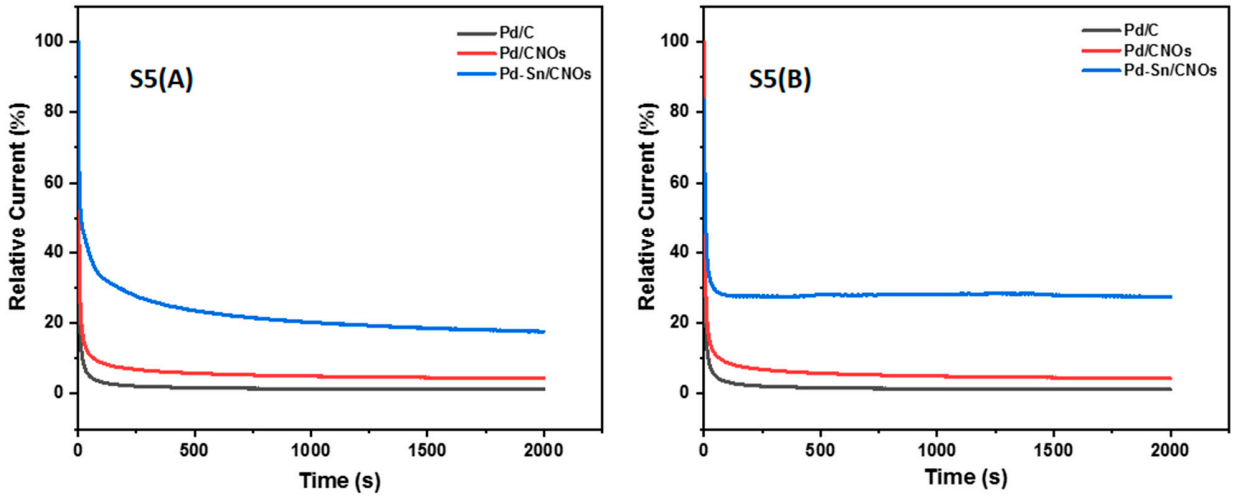


Figure S5 (A): display the chronoamperometric curve of Pd/C, Pd/CNOs and Pd-Sn/CNOs electro-catalysts in 1 M KOH + 1 M CH_3OH solution and (B) in 1 M KOH + 1 M CH_3CH_2OH solution.