



Sintese en karakterisering van nuwe langketting-bimetaal-tetrakarboksielaatkomplekse

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How to cite this abstract:

Botha, E. & Erasmus, E., 2014, 'Sintese en karakterisering van nuwe langketting-bimetaal-etrakarboksielaatkomplekse', *Suid-Afrikaanse Tydskrif vir Natuurwetenskap en Tegnologie* 33(1), Art. #1045, 1 page. <http://dx.doi.org/10.4102/satnt.v33i1.1045>

Note:

A selection of conference proceedings: Student Symposium in Science, 27 and 28 October 2012, North- West University, South Africa. Organising committee: Mr Rudi W. Pretorius (Department of Geography, University of South Africa), Dr Etienne Snyders (South African Nuclear Energy Corporation [NECSA]) and Dr Cornie G.C.E. van Sittert (School of Physical and Chemical Sciences, North- West University).

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Synthesis and characterisation of new long alkyl chain bimetallic bridging tetra-carboxylate complexes. Palladium-based heterometallic complexes are important because of their interesting physical properties and excellent catalytic activity. In this study, four monometallic trinuclear palladium long chain carboxylates and four palladium-based bimetallic bridging tetracarboxylate complexes were synthesised. These complexes were characterised by different techniques, including DSC, TGA-MS, X-Ray diffraction and IR spectroscopy.

Die interessante fisiese eienskappe en uitstaande katalitiese aktiwiteit van palladium-bevattende heterometalaal-komplekse is belangrik vir beide industrie en akademie (Sinfelt 1983).

Pd-Co is 'n voorbeeld van 'n bimetaalkatalisator wat gebruik kan word vir alkeenhydro-formulering en brandstofselle (Zamaraev 1997; Fernandez *et al.* 2005). Die tri-gebrugde bimetaal-komplekse, Pd(OOCCH₃)₃(OOCCH₃)Co(Phen), kan as enkele uitgangstof tydens katalisatorsintese gebruik word (Nefedov *et al.* 2006; Abdelsayed *et al.* 2009; Somorjai & Kliewer 2009). Die gebruik van so 'n enkelbronreagens kan die aparte agglomerasie van metale en allooivorming beperk om sodoende die eweredige verspreiding van beide metale te bevorder (Borgna *et al.* 2004). Terwyl enkelmetaal-karboksilaatverbindinge welbekend is (Deacon & Phillips 1980; Aquino 2004), is multimetalaal-karboksilate relatief onbekend (Kozitsyna *et al.* 2006; Akhmadullina *et al.* 2009). Sover ons kennis strek, bestaan daar geen literatuur ten opsigte van langketting-multimetalaal-karboksilate nie.

Tydens hierdie studie is vier enkelmetaal- tri-kern- sikliese palladiumkarboksilate met langketting-substituente en vier palladiumbevattende bimetaal-gebrugde langketting-tetrakarboksilaatkomplekse gesintetiseer. Hierdie komplekse is met verskillende tegnieke gekarakteriseer: DSC (differensiële skandeerkalorimetrie), TGA-MS (termiese gravimetrie-analise – massaspektroskopie), X-Straaldiffraksie en IR (infrarooi) spektroskopie. Die gesintetiseerde komplekse kan toepassing vind in vloeikristalvertoonskerms, elektrochemie en tot 'n groter mate in heterogene katalise.

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