

## Accepted Manuscript

Triazenide complexes of iridium. Evidence for  $[\text{Ir}(\eta^1\text{-N}_3\text{Ph}_2)(\text{HN}_3\text{Ph}_2)(1,5\text{-cod})]$ , structures of  $[\text{Ir}_2(\mu\text{-OMe})_2(1,5\text{-cod})_2]$ ,  $[\text{Ir}_2(\mu\text{-N}_3\text{Ph}_2)_2(1,5\text{-cod})_2]$ ,  $[\text{Ir}(\eta^2\text{-N}_3\text{Ph}_2)(\text{H})(\text{SiPh}_3)(1,5\text{-cod})]$ ,  $[\text{Ir}(\eta^2\text{-N}_3\text{Ph}_2)(\text{H})(\text{SnPh}_3)(1,5\text{-cod})]$  and  $[\text{Ir}(\eta^2\text{-N}_3\text{Ph}_2)(\text{SC}_6\text{F}_5)_2(1,5\text{-cod})]$

Laurence Carlton, Michelle S. Nyoni, Manuel A. Fernandes

PII: S0277-5387(16)30002-X  
DOI: <http://dx.doi.org/10.1016/j.poly.2016.03.022>  
Reference: POLY 11887

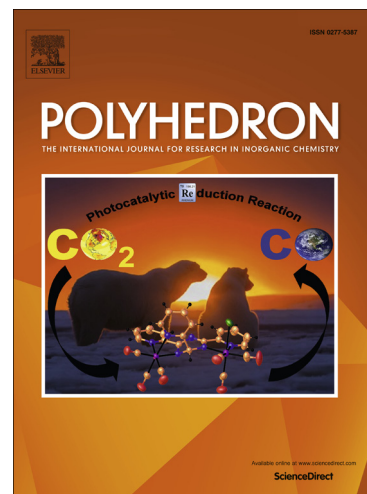
To appear in: *Polyhedron*

Received Date: 26 January 2016

Accepted Date: 11 March 2016

Please cite this article as: L. Carlton, M.S. Nyoni, M.A. Fernandes, Triazenide complexes of iridium. Evidence for  $[\text{Ir}(\eta^1\text{-N}_3\text{Ph}_2)(\text{HN}_3\text{Ph}_2)(1,5\text{-cod})]$ , structures of  $[\text{Ir}_2(\mu\text{-OMe})_2(1,5\text{-cod})_2]$ ,  $[\text{Ir}_2(\mu\text{-N}_3\text{Ph}_2)_2(1,5\text{-cod})_2]$ ,  $[\text{Ir}(\eta^2\text{-N}_3\text{Ph}_2)(\text{H})(\text{SiPh}_3)(1,5\text{-cod})]$ ,  $[\text{Ir}(\eta^2\text{-N}_3\text{Ph}_2)(\text{H})(\text{SnPh}_3)(1,5\text{-cod})]$  and  $[\text{Ir}(\eta^2\text{-N}_3\text{Ph}_2)(\text{SC}_6\text{F}_5)_2(1,5\text{-cod})]$ , *Polyhedron* (2016), doi: <http://dx.doi.org/10.1016/j.poly.2016.03.022>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Triazenide complexes of iridium. Evidence for  $[\text{Ir}(\eta^1\text{-N}_3\text{Ph}_2)(\text{HN}_3\text{Ph}_2)(1,5\text{-cod})]$ , structures of  $[\text{Ir}_2(\mu\text{-OMe})_2(1,5\text{-cod})_2]$ ,  $[\text{Ir}_2(\mu\text{-N}_3\text{Ph}_2)_2(1,5\text{-cod})_2]$ ,  $[\text{Ir}(\eta^2\text{-N}_3\text{Ph}_2)(\text{H})(\text{SiPh}_3)(1,5\text{-cod})]$ ,  $[\text{Ir}(\eta^2\text{-N}_3\text{Ph}_2)(\text{H})(\text{SnPh}_3)(1,5\text{-cod})]$  and  $[\text{Ir}(\eta^2\text{-N}_3\text{Ph}_2)(\text{SC}_6\text{F}_5)_2(1,5\text{-cod})]$ .

Laurence Carlton, Michelle S. Nyoni and Manuel A. Fernandes

Molecular Sciences Institute, School of Chemistry, University of the Witwatersrand, Johannesburg, Republic of South Africa

Corresponding author. E-mail: laurence.carlton@wits.ac.za

Keywords: Iridium, Triazenide, X-ray crystal structure, Triphenylsilyl, Triphenyltin, Pentafluorophenylthiolate.

## ABSTRACT

The reaction of  $[\text{Ir}_2(\mu\text{-OMe})_2(1,5\text{-cod})_2]$  with diphenyltriazene gives a product, formulated as  $[\text{Ir}(\eta^1\text{-N}_3\text{Ph}_2)(\text{HN}_3\text{Ph}_2)(1,5\text{-cod})]$  on the basis of NMR data, which dimerises slowly in solution forming  $[\text{Ir}_2(\mu\text{-N}_3\text{Ph}_2)_2(1,5\text{-cod})_2]$  and which reacts with  $\text{SiHPh}_3$ ,  $\text{SnHPh}_3$  and  $\text{C}_6\text{F}_5\text{SH}$  to give  $[\text{Ir}(\eta^2\text{-N}_3\text{Ph}_2)(\text{H})(\text{SiPh}_3)(1,5\text{-cod})]$ ,  $[\text{Ir}(\eta^2\text{-N}_3\text{Ph}_2)(\text{H})(\text{SnPh}_3)(1,5\text{-cod})]$  and  $[\text{Ir}(\eta^2\text{-N}_3\text{Ph}_2)(\text{SC}_6\text{F}_5)_2(1,5\text{-cod})]$  respectively.

## 1. Introduction

The triazenide ion, most notably in the diaryl form, has recently attracted attention as a ligand of potential interest in homogenous catalysis because of its versatility in modes of binding to a metal and the relative ease with which the steric and electronic properties can be adjusted by choice of appropriate substituents for the aryl groups. Diphenyltriazene and derivatives in which the phenyl groups carry substituents have been used in studies of the chemistry of d block [1-73], main group [54, 74-81] and f block [57, 78, 82, 83] metals where the triazenide ligand exhibits the bonding modes  $\eta^1$  [1-8, 57],  $\eta^2$  (nonbridging) [1, 6, 9-33, 54-58, 73-83] and bridging [21, 28, 34-54, 60-72]. Other, less common, bonding modes include chelation of one metal atom while bridging to a second metal atom *via* one of the nitrogens (which binds to both metal atoms) [43] and the use of two adjacent nitrogens to bind to a metal atom while the third nitrogen binds to a second metal atom [66, 67, 76]. Many triazenide complexes are now being prepared in which substituents on the  $\text{N}_3\text{Ph}_2$  phenyl groups are also involved in bonding to a metal atom [55-73] leading, in some cases, to

Download English Version:

<https://daneshyari.com/en/article/7764320>

Download Persian Version:

<https://daneshyari.com/article/7764320>

[Daneshyari.com](https://daneshyari.com)