



Complexes of Pyridyl Azafluoranthenes with Mo and Pd

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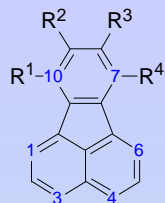
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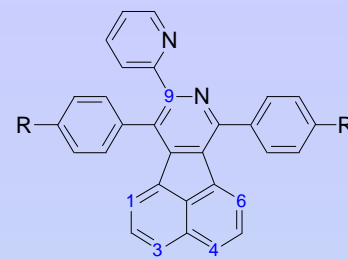


Introduction and Aim

Fluoranthene derivatives are of particular interest due to their electronic and optical properties. 7,8,9,10-Substituted fluoranthene derivatives have been used to synthesise large polycyclic aromatic hydrocarbons [1-3]. To our knowledge there are no reports on 8-Azafluoranthene derivatives. Here we present the synthesis of novel 9-(2-pyridyl)-8-azafluoranthene derivatives and their metal complexes, in which the ligand acts as (i) a bidentate ligand through both N-donors and (ii) an anionic (NNC) terdentate ligand



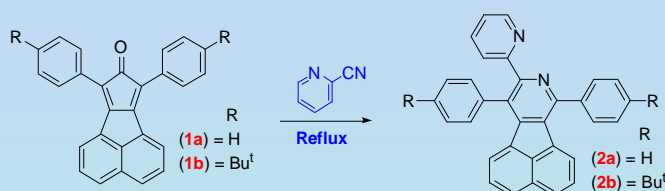
Fluoranthene (R = H)



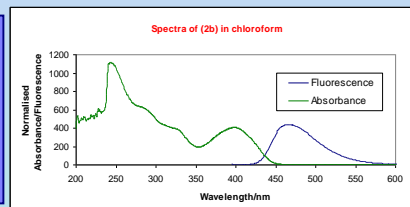
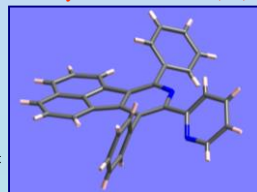
7,9,10-Trisubstituted 8-Azafluoranthene

Results and Discussion

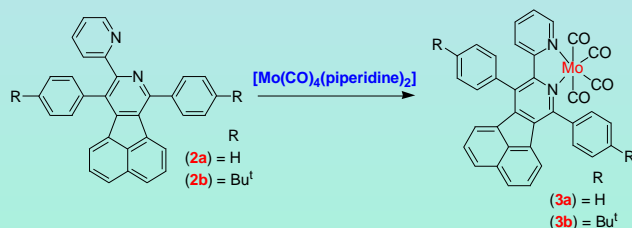
Azafluoranthenes (**2**) were made by the Diels-Alder [4+2] cycloaddition reaction between (**1**) and 2-cyano pyridine.



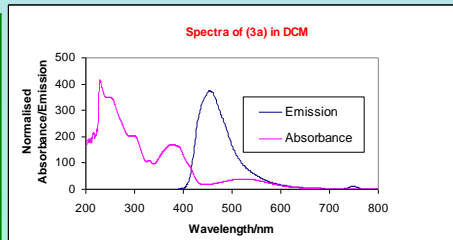
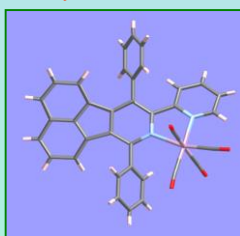
Crystal structure of (**2a**)



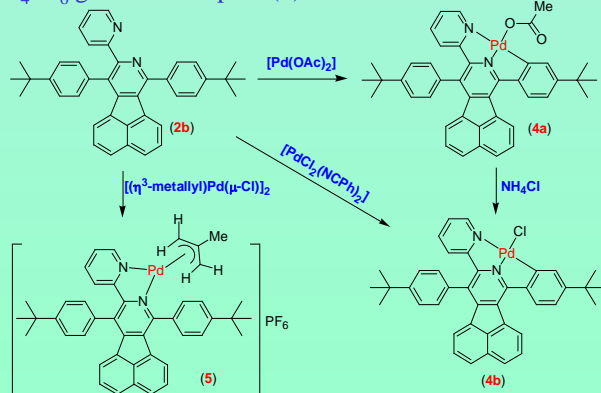
Reaction of (**2**) with [Mo(CO)₄(piperidine)₂] afforded the tetracarbonyl Mo(0) complex (**3**) in which the ligand (**2**) is bidentate.



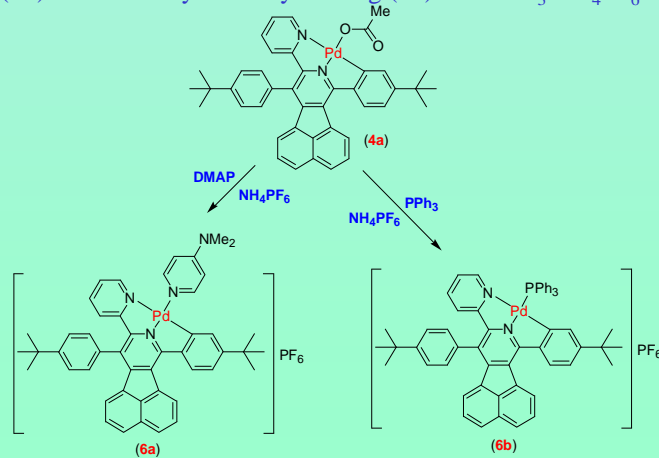
Crystal structure of (**3a**)



Treatment of (**2b**) with [Pd(OAc)₂] gave an *ortho*-metallated Pd(II) complex (**4a**) with an anionic terdentate (NNC) ligand. The analogous chloride-complex (**4b**) was made. Treatment of (**2b**) with (η³-metallyl) palladium chloride followed by NH₄PF₆ gave the complex (**5**).



Treatment of (**4a**) with 4-dimethylamino pyridine followed by NH₄PF₆ gave the salt (**6a**). The analogous phosphine-complex (**6b**) was similarly made by treating (**4a**) with PPh₃/NH₄PF₆.



References

1. A. Gourdon, *J. Org. Chem.*, 1998, 2797.
2. J. D. Debad, *et al*, *J. Am. Chem. Soc.*, 1996, **118**, 2374.
3. M. Wehmeier, *et al*, *Chem. Eur. J.*, 2001, **7**, 2197.

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Dr. John O'Brien and Dr. Manuel Ruether for NMR data, Dr. Martin Feeney for Mass spectral analysis and SFI for financial support.

