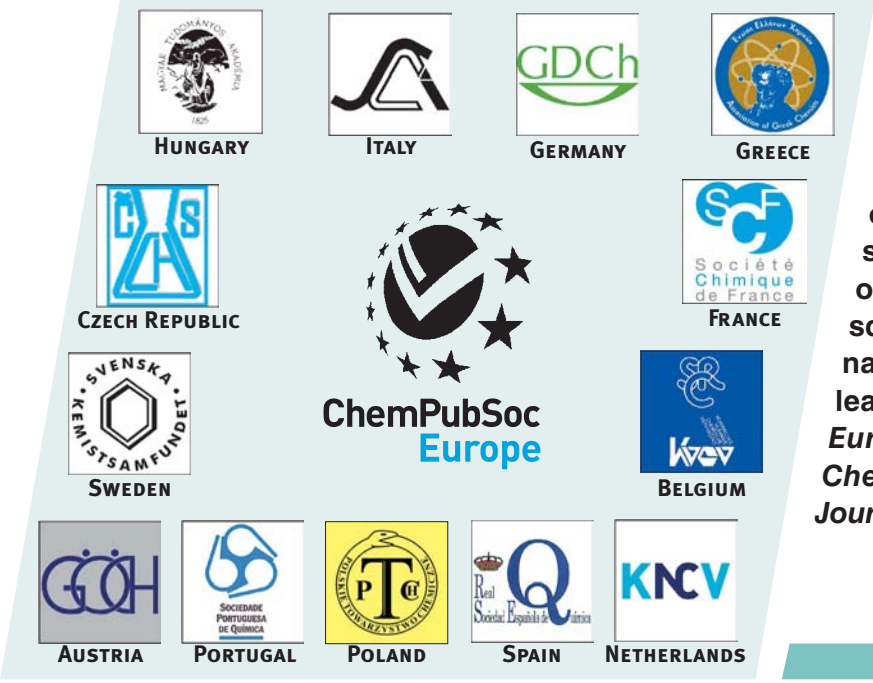
EurJIC
European Journal of Inorganic Chemistry

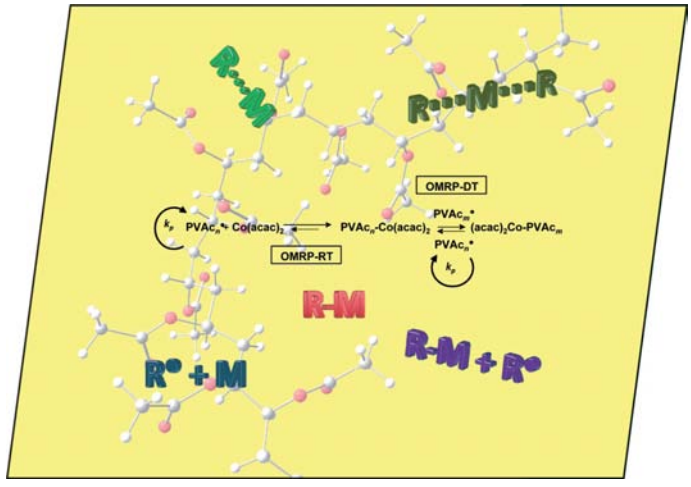


EurJIC is a journal of ChemPubSoc Europe, a union of 16 European chemical societies formed for the purpose of publishing high- quality science. All owners merged their national journals to form two leading chemistry journals, the *European Journal of Inorganic Chemistry* and the *European Journal of Organic Chemistry*.

Other ChemPubSoc Europe journals are *Chemistry – A European Journal*, *ChemBioChem*, *ChemPhysChem*, *ChemMedChem*, *ChemSusChem* and *ChemCatChem.*

COVER PICTURE

The cover picture shows two different and interplaying processes involving a metal complex and organic radicals, which play a key role in the controlled radical polymerization of vinyl acetate by what has been termed "Organometallic Mediated Radical Polymerization" (OMRP). Bis(acetylacetonato)cobalt(II), $Co(acac)_2$, reversibly adds the growing radical chain (symbolized by "M + R˙") to form a dormant metal-capped $(acac)_2$-Co−PVAc chain ("M−R"), which contains a thermally fragile metal−carbon bond. The latter, however, in addition to the reversible radical chain dissociation, can also undergo an associative radical-chain exchange through a transition state symbolized as "R···M···R". This is just one example of how one-electron processes involving metal complexes and radicals play a fundamental role in radical polymerization. It is the topic of the Microreview by R. Poli on p. 1513ff, covering the coordination chemistry of organic radicals and its relevance to metal-mediated radical polymerization. The background image represents a random conformation of a poly(vinyl acetate) chain segment.



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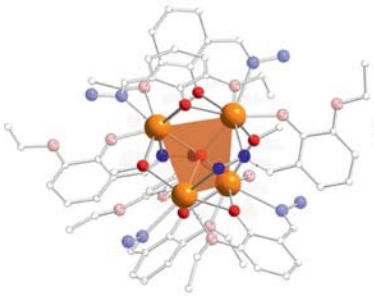
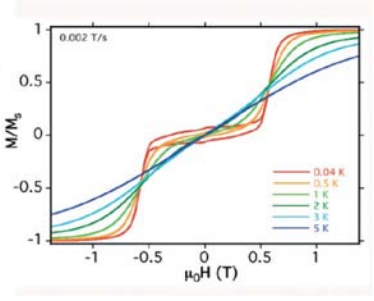
MICROREVIEW

Radicals react with transition-metal complexes in many different ways. The type of reaction, when reversible, is relevant to the outcome of metal-mediated radical polymerizations. This article analyses all these reactivity patterns and their relevance to radical polymerization processes, attempting to identify trends and principles of general use.

SHORT COMMUNICATIONS

New Ir^{III}–porphyrin complexes were synthesized and characterized. They possess high phosphorescence quantum yields (up to 30%). Axial ligands influence their solubility and photophysical properties. Furthermore, functional groups were introduced and used for covalent coupling. Application of these dyes for designing advanced optical oxygen sensing materials is demonstrated.





Coordination-induced chirality was achieved in a unique tetrahedral $[Dy_4(\mu_4\text{-}O)(\mu\text{-}OMe)_2(beh)_2(esh)_4]\cdot 3MeOH$ complex through a twisted diazine bridge from a Schiff base ligand. Magnetic measurements reveal weak intramolecular antiferromagnetic interactions ($J = -0.3\ cm^{-1}$) with single-molecule magnet behaviour (U_{eff} = 23.42 K).

FULL PAPERS

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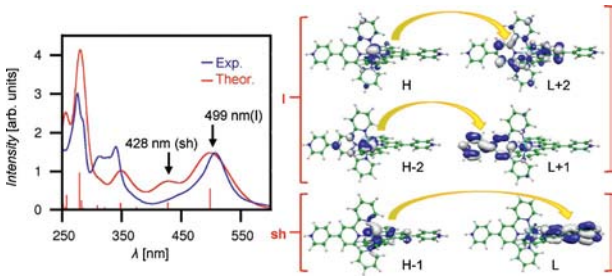
pH-Sensitive Ru Complex

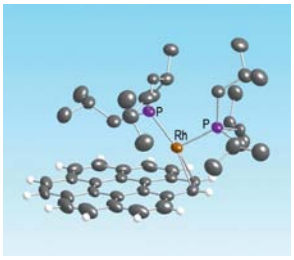


A DFT/TDDFT study has been carried out to examine the pH-dependent photophysical properties of $[Ru(tpy\text{-}py)_2]^{2+}$. The pH dependence is due to the presence of the basic nitrogen atom on the terminal pyridyl groups. A good agreement between theory and experiment was found, reproducing the redshift of the absorption spectrum and rationalizing the emission upon increasing pH.

Keywords: Photophysics / Density functional calculations / Protonation / UV/Vis spectroscopy / Luminescence / Ruthenium

Hydrocarbon Rh Complexes

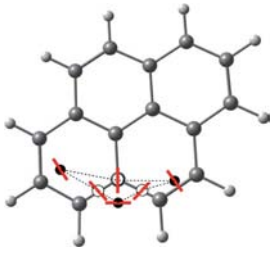
A range of polyaromatic hydrocarbons of increasing size (naphthalene through coronene) have been prepared and their solid-state and solution structures investigated.



Keywords: Rhodium / Arenes / Arene ligands / Pi interactions / Hydrocarbons / Polyaromatic hydrocarbons

Haptotropic Shifts

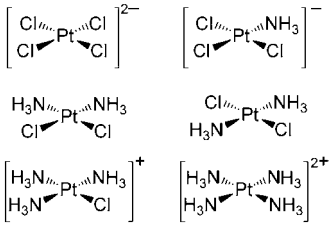
Unavoidable compromises between the electronic demands of the $\{Rh(PiBu_3)_2\}^+$ fragment and the aromatic ligand lead to low barriers to haptotropic shifts in complexes of pyrene and coronene.



Keywords: Density functional calculations / Rhodium / Arene ligands / Arenes / Pi interactions / Hydrocarbons / Polyaromatic hydrocarbons

Pt–DNA Interaction

The interaction between double-stranded DNA (ds-DNA) and six neutral, anionic or cationic Pt complexes $[PtCl_n(NH_3)_{4-n}]^{(2-n)}$ ($n = 0–4$) was evaluated by using an electrochemical DNA biosensor. This interaction was measured as a function of the variation in the guanine oxidation signal of the metal–DNA adduct deposited onto the electrode.



Keywords: Platinum / DNA / Biosensors / Drug design / Electrochemistry

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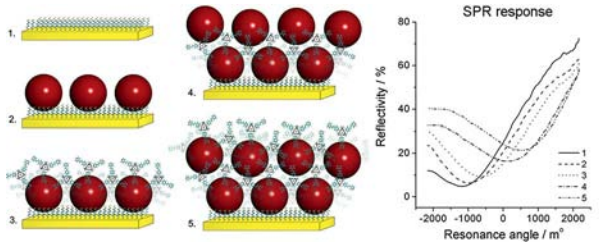
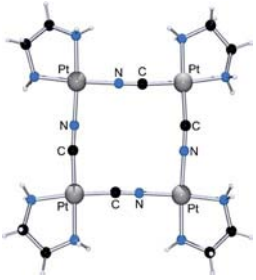
Au/Ru Hybrid Materials



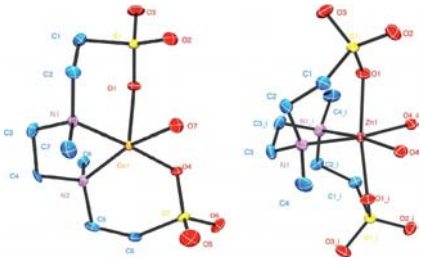
A coordinative layer-by-layer approach has been exploited to fabricate hybrid films of gold nanoparticles and $[Ru_3(CH_3COO)_6(L)_3]^+$ triruthenium cluster complexes [L = 4-cyanopyridine, 4,4′-bipyridine, 4,4′-bis-(pyridyl)ethylene] as bridging ligands. The binding constants and stabilities depend upon the ligands L as follows: bpe > 4,4′-bpy >> 4-CNpy. Their electrocatalytic properties have been evaluated.

Metallacycles



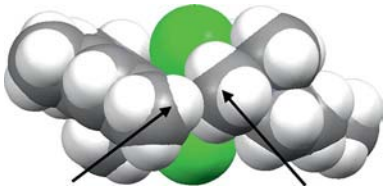
Cationic molecular squares composed of (en)M (M = Pt^{II}, Pd^{II}) corners and cyanide bridges have been prepared and details of their formation and reactivity have been studied.

Antiviral Transition-Metal Complexes



A sulfonate-containing N-donor ligand readily forms complexes with transition metals (Ni, Co, Cu and Zn). All of them have been tested as HIV anti-viral agents both in pre- and post-infected cells and show dual preventive and therapeutic behaviour.

Radical Polymerization



Neutral monochlorido–Cu^{II} complexes with (dialkylamino)ethyl-functionalized β-ketiminato ligands have been synthesized, structurally characterized, and shown to control the radical polymerization of styrene under reverse atom-transfer radical polymerization (ATRP) conditions.

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Supporting information on the WWW (see article for access details).

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