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COVER PICTURE

The cover picture shows the numerous opportunities luminescent rhenium(I) tricarbonyl polypyridine complexes offer regarding the development of probes for biological applications. Since the spectroscopic and luminescence properties of rhenium(I) tricarbonyl polypyridine complexes were reported in the 1970s, a number of sensors and probes have been derived from these complexes. K. K.-W. Lo et al. describe in their Microreview on p. 3551ff the fundamental emission characteristics of these complexes and explain why they hold promise for use as luminescent sensors. Additionally, the recent design of rhenium(I) tricarbonyl polypyridine complexes as biomolecular and cellular probes is summarized. Emphasis is placed on the structure–property relationships, bioconjugation, biomolecular binding, cellular uptake, cytotoxicity, and bioimaging studies of these complexes. Mr. Michael Wai-Lun Chiang is acknowledged for the cover picture design.



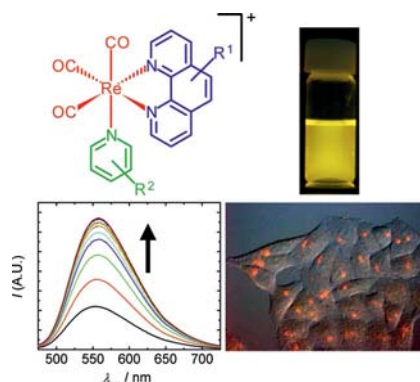
MICROREVIEW

Biomolecular and Cellular Probes

K. K.-W. Lo,* K. Y. Zhang,
S. P.-Y. Li 3551–3568

Recent Exploitation of Luminescent Rhenium(I) Tricarbonyl Polypyridine Complexes as Biomolecular and Cellular Probes

Keywords: Labels / Luminescence / N ligands / Probes / Rhenium



In this Microreview, we describe the fundamental emission characteristics of luminescent rhenium(I) tricarbonyl polypyridine complexes and explain why they hold promise for use as luminescent sensors. Additionally, we summarize the recent design of these complexes as biomolecular and cellular probes.

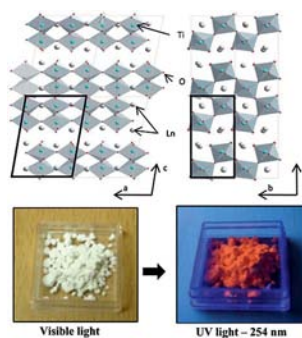
FULL PAPERS

Luminescent Ln Materials

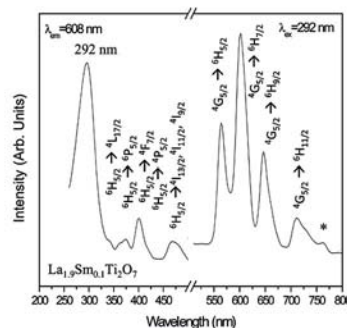
Z. Shao, S. Saitzek,* J.-F. Blach,
A. Sayede, P. Roussel,
R. Desfeux 3569–3576

Structural Characterization and Photoluminescent Properties of $(\text{La}_{1-x}\text{Sm}_x)_2\text{Ti}_2\text{O}_7$ Solid Solutions Synthesized by a Sol–Gel Route

Keywords: Perovskite phases / Sol–gel processes / Luminescence / Density functional calculations / X-ray diffraction / Raman spectroscopy



$(\text{La}_{1-x}\text{Sm}_x)_2\text{Ti}_2\text{O}_7$ compounds were prepared by a sol–gel technique. An XRD study shows the substitution of La^{3+} ions by Sm^{3+} ions to a level of $x = 0.8$ while preserving the layered-perovskite structure.



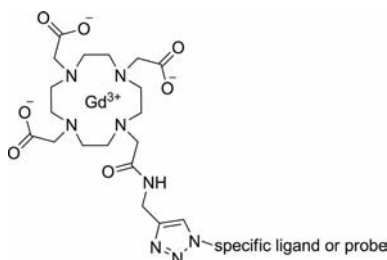
The luminescent properties were also studied. For low substitution rates, the material exhibits an orange emission under UV excitation.

Magnetic Resonance Imaging Agents

P. Verwilt, S. V. Eliseeva, S. Carron,
L. Vander Elst, C. Burtea, G. Dehaen,
S. Laurent, K. Binnemans, R. N. Muller,
T. N. Parac-Vogt,
W. M. De Borggraeve* 3577–3585



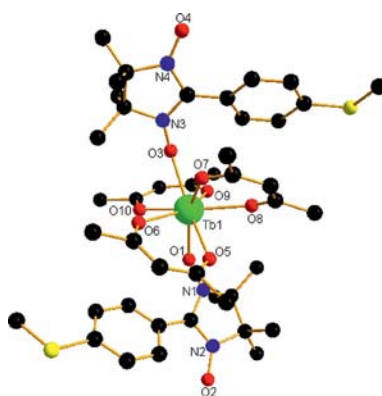
A Modular Approach towards the Synthesis of Target-Specific MRI Contrast Agents



A modular pathway for the synthesis of new specific MRI contrast agents and their luminescent analogues is described. By using two azide-bearing probes, a “click” reaction with an alkyne-bearing 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid (DOTA) analogue yielded a possible blood-pool contrast agent, as well as a contrast agent with a high affinity for cells expressing $\alpha_v\beta_3$ integrin.

Tb(III)–Radical Magnetic Complexes

Two new Tb^{III}–radical complexes with tri-spin mononuclear and one-dimensional chain structures, respectively, have been prepared. Magnetic studies show that the two complexes display slow magnetic relaxation that resembles single-molecule and single-chain magnet behavior, respectively.



X. Wang,* X. Bao, P. Xu,

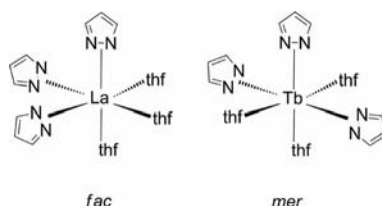
L. Li 3586–3591

From Discrete Molecule to One-Dimensional Chain: Two New Nitronyl Nitroxide–Lanthanide Complexes Exhibiting Slow Magnetic Relaxation

Keywords: Nitronyl nitroxide / Lanthanides / Terbium / Magnetic properties / Radicals

Rare Earth Complexes

New trivalent rare earth metal complexes, [RE(tfpz)₃(solv)_n], of the unsymmetrical 3-(2'-thienyl)-5-(trifluoromethyl)pyrazolate ligand (tfpz) were prepared and structurally characterised. A size-based stereochemical change was observed for the [RE(tfpz)₃(thf)₃] species.



G. B. Deacon,* P. C. Junk,*

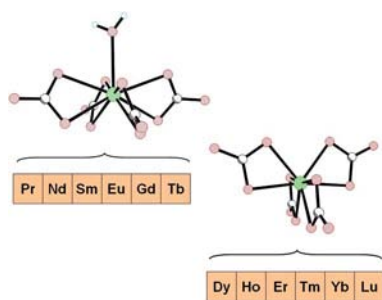
A. Urbatsch 3592–3600

Trivalent Rare Earth Complexes of the Unsymmetrical 3-(2'-Thienyl)-5-(trifluoromethyl)pyrazolate Ligand

Keywords: Lanthanides / Rare earths / N ligands

Inorganic Lanthanide Complexes

The molecular structures of the rare earth carbonates revealed that the light lanthanides are 9-coordinate, whereas the heavy lanthanides are 8-coordinate. The nature of the Ln–O bonds was studied by experimental and theoretical (DFT) methods.



R. Janicki, P. Starynowicz,

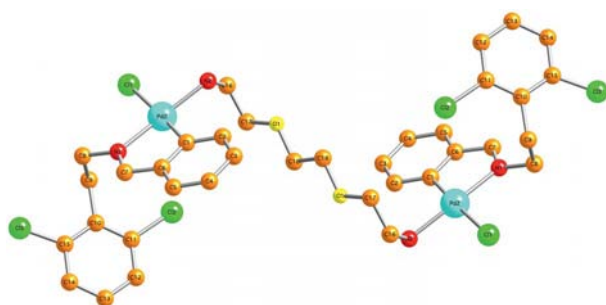
A. Mondry* 3601–3616

Lanthanide Carbonates



Keywords: Structure elucidation / UV/Vis/ NIR spectroscopy / IR spectroscopy / Density functional calculations / Lanthanides / Carbonate complexes

Cyclopalladation



Dinuclear palladium compounds containing different types of symmetric bidentate Lewis bases acting as bridging ligands between two identical cyclopalladated units

are reported. A theoretical study of the differences in energy between the stereoisomers of the compounds is also reported.

J. Albert,* R. Bosque, L. D'Andrea,

J. Granell,* M. Font-Bardia,

T. Calvet 3617–3631

Synthesis of Cyclopalladated Derivatives of (*E*)-*N*-Benzylidene-2-(2,6-dichlorophenyl)-ethanamine and Their Reactivity towards Monodentate and Symmetric Bidentate Lewis Bases

Keywords: Metalation / Palladium / Imines / Density functional calculations

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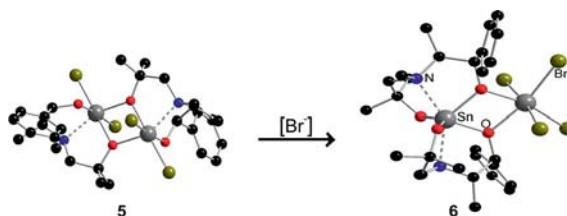
Tin Alkoxide Complexes

L. Iovkova-Berends, T. Berends, C. Dietz,
G. Bradtmöller, D. Schollmeyer,
K. Jurkschat* 3632–3643



Syntheses, Structures and Reactivity of New Intramolecularly Coordinated Tin Alkoxides Based on an Enantiopure Ephedrine Derivative

Keywords: Tin / Alkoxide complexes / NMR spectroscopy / Ephedrine / X-ray diffraction analysis



Bromide anions catalyze the rearrangement of the bromido-substituted tin ephedrine-based alkoxide derivative **5** to give the un-

precedented tin tetrabromide coordinated *spiro*-type complex **6**.

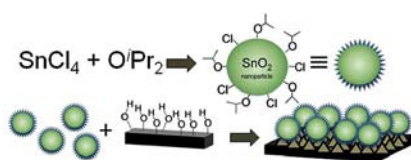
Tin Oxide Nanoparticles

A. Aboulaich, B. Boury,*
P. H. Mutin 3644–3649



Reactive and Organosoluble SnO₂ Nanoparticles by a Surfactant-Free Non-Hydrolytic Sol–Gel Route

Keywords: Sol–gel processes / Nanoparticles / Nanostructures / Synthetic methods / Tin



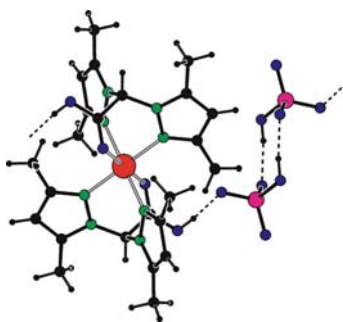
Tin(IV) oxide nanoparticles (5–15 nm) have been synthesized in high yield in CH₂Cl₂ by a non-hydrolytic sol–gel process. Their high reactivity towards hydroxylated surfaces is self-limiting due to the specific functionality at the surface and allows the deposition of a monolayer of nanoparticles.

Biomimetics

B. Kozlevčar,* P. Gamez, R. de Gelder,
Z. Jagličić, P. Strauch, N. Kitanovski,
J. Reedijk 3650–3655

Counterion and Solvent Effects on the Primary Coordination Sphere of Copper(II) Bis(3,5-dimethylpyrazol-1-yl)acetic Acid Coordination Compounds

Keywords: Copper / Coordination modes / Hydrogen bonds / Counterions / Solvent effects



A series of copper(II) coordination compounds with the neutral ligand bis(3,5-dimethylpyrazol-1-yl)acetic acid and its anionic form have been synthesized. Interesting coordination modes are observed, which have been ascribed to hydrogen-bonding interactions involving the carboxylic group, especially in aqueous solutions containing different acids (H₂SO₄, HCl, CH₃COOH).

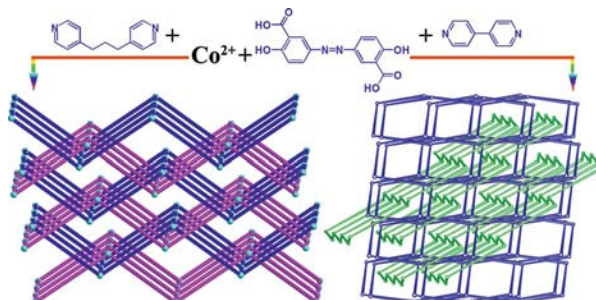
Entangled Metal–Drug Complexes

D.-R. Xiao,* D.-Z. Sun,
J.-L. Liu, G.-J. Zhang, H.-Y. Chen,
J.-H. He, S.-W. Yan, R. Yuan,
E.-B. Wang* 3656–3663



Two Unprecedented Entangled Metal–Olsalazine Complexes with Coexistence of 2D → 3D Polycatenation and *meso*-Helix

Keywords: Cobalt / Coordination polymers / Polycatenation / *meso*-Helix / Crystal engineering / N ligands



Two unprecedented polycatenated metal–olsalazine complexes, containing rare *meso*-helices, are reported, which represent the

first examples of entangled metal–olsalazine complexes.

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