FROM THE LITERATURE

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The September 2008 issue of *Chimia* contains an editorial by C. Chatgilialoglu of ISOF, Consiglio Nazionale delle Ricerche (CNR), Bologna, and some articles on radicals in Chemical Biology by the same person and by other authors operating in several, predominantly European, research institutions. In his editorial, Dr. Chatgilialoglu points out the importance of studies on free radicals for a better understanding of biological processes, based on chemical principles and tools.

M.W. Kenan and D.G. Nocera of Massachusetts Institute of Technology (*Science,* 2008, **321**, 1072) report a catalyst being formed through oxidative polarization of an indium tin oxide electrode in phosphate–buffered water in the presence of cobalt(II) ions, and capable of producing O_2 electrocatalytically. A profile of the senior author of this article had appeared in a previous issue of the same journal (*Science,* 2007, **315**, 789).

A paper from the Dipartimento di Ingegneria Chimica dei Processi e dei Materiali, Università di Palermo, in collaboration with the Turkish Anadolu Üniversitesi, has reported the selective photocatalytic oxidation of aromatic alcohols (benzyl alcohol and *p*–methoxybenzyl alcohol) to the corresponding aldehydes in water (S. Yurdakal *et al.*, *J. Am. Chem. Soc.*, 2008, **130**, 1568). The highest selectivity was observed with the catalyst obtained by hydrolyzing $TiCl_4$: after drying at 333 K, the resulting product shows a very low degree of crystallinity, as established by XRD experiments.

The chelating properties of 2–methyl–3–hydroxy–4–pyridinecarboxylic acid towards iron(III) and aluminium(III) have been studied in aqueous solution, as reported in a study carried out at the Università di Padova (A. Dean *et al.*, *J. Chem. Soc.*, *Dalton Trans.*, **2008**, 1689).

A contribution from the Università di Bologna, the Sincrotrone Trieste S.C.p.A. and two CNR institutions (IENI, located in Padova and ISOF, Bologna) in collaboration with the Department of Chemistry, University of Warwick (C. Bruno *et al.*, *J. Am. Chem. Soc.*, 2008, **130**, 3788) has reported the formation of C_{60} cations through an electrochemical anodic process. Quantum chemical computations suggest that the doubly charged species $(C_{60})_2^{2+}$ is a carbon–carbon bonded triplet state.

A paper in collaboration (Università di Bologna, a CNR Institute located in Ferrara, and three British Universities) reports the synthesis, and photophysical properties of a number of anion–binding sites based on aminopyridinium units (M.H. Filby *et al.*, *J. Am. Chem. Soc.*, 2008, **130**, 4105). The X–ray crystal structure of one of the precursors has been presented.

A contribution from three different research institutions of the Università di Roma (D. Monti *et al.*, *J. Am. Chem. Soc.*, 2007, **129**, 6688) reports the chiral amplification of porphyrin derivatives by templated heteroaggregation, leading to high supramolecular chirality.

The mechanism of inter- and intramolecular communication was studied by computational methods for a guanidine nucleotide exchange factor (GEF), the thromboxane A2 receptor (TXA_2R) and other systems, as for a paper contributed by the Dulbecco Telethon Institute and the Università di Modena e Reggio Emilia (F. Raimondi *et al.*, *J. Am. Chem. Soc.*, 2008, **130**, 4310).

A contribution from the Università di Padova and the Università di Trieste (D. Montagner *et al.*, *Inorg. Chem.*, 2008, **47**, 2688) has reported the addition of 1–methylcytosine (1–MeCy) or 9–methylguanine (9–MeGu) giving the platinum(II) complexes *cis*–$(Pt(1\text{–}MeCy)(PPh_3)_2(ONO_2))NO_3$ or *cis*–$(Pt(9\text{–}MeGu)_2(PPh_3)_2(ONO_2))(NO_3)_2$, respectively. Both complexes have been studied by X–ray diffraction methods, which showed the presence of π–π stacking interactions involving the phenyl groups and the coordinated nitrogen–containing ligands.

Halogen bonding (XB) has been observed for the iodide with respect to 1,3,5–trifluoro–2,4,6–triiodobenzene, as for a study carried out at DCMIC "G. Natta", Politecnico di Milano, and at the ISTM Institute of CNR in the same town (P. Metrangolo *et al.*, *Chem. Commun.*, **2008**, 1635). The two components are present in the 1:1 molar ratio, and the $I\cdots I^-$ distances are in the 3.385÷3.508 Å range, shorter than the sum of the van der Waals and Pauling radii.

A contribution from the Universities of Camerino and the ICIS Institute of CNR in Padova has reported the sodium derivative and some tin(IV) complexes using the sodium derivative of bis(1–methyl–1*H*–imidazol–2–ylthio)acetato, $Na((S\text{–}tim)_2CHCO_2)$, as starting material (M. Pellei *et al.*, *J. Organometal. Chem.*, 2008, **693**, 996).

A joint contribution from the Universities of Salerno and Zürich (X. Luan *et al.*, *J. Am. Chem. Soc.*, 2008, **130**, 6848) reports the synthesis and characterization of a new class of stable imidazolin–2–ylidenes (a new *N*–heterocyclic carbene), whose side chains contain substituted naphthyl units generating atropisomers of symmetry C_2 and C_s. Catalytic applications of the corresponding palladium(II) and ruthenium(II) complexes were reported. The thermodynamics of *N*–heterocyclic carbene dimerization has been discussed in a contribution from the Universities of Napoli and Zürich, and the Institute of Chemical Research of Catalonia (A. Poater *et al.*, *Organometallics*, 2008, **27**, 2679).

A contribution from the Università di Torino and Emory University in Atlanta (L. Salassa *et al.*, *Organometallics*, 2008, **27**, 1427) reports three new carbonyl–chloro complexes of rhenium(I) containing *N,N*–bidentate ligands, the crystal and molecular structure of one of the complexes being also described. Spectroscopic and electrochemical properties of the ligands and their rhenium complexes are presented.

Some new pentamethylcyclopentadienyl rhodium(III) derivatives containing 1–boranyl–1,3,5–triaza–7–phosphaadamantane as ligand have been synthesized and the crystal and molecular structures of two of them have been solved, as a contribution from the Universidade de

Vigo, the Università di Milano, and the CNR Institute ICCOM of Firenze (S. Bolaño *et al.*, *J. Organometal. Chem.*, 2008, **693**, 2397). For one of the two complexes, the Rh–carbon bond distances to the η^2–coordinated styrene are 2.098(9) and 2.143(9) Å.

A group of researchers operating at the Università di Torino and at the Università del Piemonte Orientale has reported the reactions of $Fe_3(CO)_{12}$ with 2–methyl–3–butyn–2–ol and 3–pentyn–1–ol resulting in the formation of a binuclear iron complex, and a trinuclear hydrido complex, respectively. Both complexes were studied by X–ray diffraction methods (F. Bertolotti *et al.*, *J. Organomet. Chem.*, 2008, **693**, 2673).

Reduction of polyketones – the product of the co–polymerization of 4–methylstyrene with CO – by hydrogen transfer from 2–propanol by using IrX(cod)(bidentate N–donor), X=Cl, I, as catalytic precursor has been reported (B. Milani *et al.*, *J. Chem. Soc., Dalton Trans.*, **2008**, 4659). The resulting polyalcohols were obtained in yields as high as 95%.

Ammonium cation complexation by oxygen–containing inorganic structures is a matter of considerable interest. In one such a case, tetraphosphonato cavitand complexes were evidenced by fluorescence spectroscopy, as for a paper contributed by the Universities of Parma and Bologna (E. Biavardi *et al.*, *Chem. Commun.*, **2008**, 1638): in this case the cyclic phosphonato structure displays a number of interactions towards charged *N*–methyl derivatives. In a contribution from the Universities of Salerno and Trieste (I. Izzo *et al.*, *Chem. Commun.*, **2008**, 2986) a cationic calixarene was found to have ionophoric activity. In a, for some aspects, related area, the anionic *N*,*N*–dialkylcarbamato complex $(B(OCN^iPr_2)_4)^-$ was shown to form hydrogen bonds with the $(NH_2{}^iPr_2)^+$ cation, whereas the parent dinuclear neutral derivative $B_2(OCN^iPr_2)_6$ is a dimer with bridging carbamato groups (D. Belli Dell'Amico *et al.*, *Inorg. Chem.*, 2008, **47**, 5372).

Two contributions from the Politecnico di Bari, Dipartimento di Ingegneria, report new data on platinum–containing complexes. In one of these papers, a linear phosphido– and hydrido–bridged trimer with two Pt–Pt bonds was reported (P. Mastrorilli, *J. Chem. Soc., Dalton Trans.*, **2008**, 4555). In the second contribution, the same Department, in collaboration with the Institut für Anorganische Chemie der RWTH Aachen, and with the Università di Chieti (V. Gallo *et al.*, *Inorg. Chem.*, 2008, **47**, 4785) describes the reactivity of a phosphinito–bridged Pt(I)–Pt(I) dimer with nucleophiles, the crystal and molecular structures of two of the products being reported.

Two research groups operating at the Universities of Ferrara and Bologna (M.T. Indelli *et al.*, *J. Am. Chem. Soc.*, 2008, **130**, 7286) have reported the formation and properties of a ruthenium–polypyridine chromophore bonded to the photochromic unit of 1,2–bis(2–methylbenzothiophene–3–yl)maleimide either directly or through a methylene bridge. In both ruthenium complexes, the photoconversion efficiency is much higher than for the photochromic unit it self.

Spin–spin coupling constants ($^1J(^{119}Sn, ^{13}C)$ and $^2J(^{119}Sn, ^1H)$) in di– and trimethyltin(IV) derivatives have been calculated by a research group operating at the Università di Palermo (G. Casella *et al.*, *Inorg. Chem.*, 2008, **47**, 4796).

A joint paper from the Fritz–Haber–Institut der Max–Planck–Gesellschaft and the Università di Milano–Bicocca (V. Simic–Milosevic *et al.*, *J. Am. Chem. Soc.*, 2008, **130**, 7814) has studied the deposition of Au atoms on MgO grown on Ag(001): by scanning tunnelling microscopy it was possible to conclude that gold dimers are absorbed on oxygen sites, un agreement with theoretical predictions.

A contribution from the Università di Napoli, Dipartimento di Chimica "P. Corradini" (V. Barone *et al.*, *Acc. Chem. Res.*, 2008, **41**, 605) concerns the results of quantum–mechanical computations on small rigid molecules in the gas phase and large flexible molecules in solution.

Luminescent tricarbonyl complexes of rhenium(I) have been described in a paper in collaboration by several CNR and University institutions located in Milano (D. Donghi *et al.*, *Inorg. Chem.*, 2008, **47**, 4243) for systems constituted by 1,2–diazines bridging two $Re(\mu–X)(CO)_3$ fragments. The single–crystal X–ray diffraction study of the pyridazine derivative with bridging chlorides has established a Re···Re non–bonding distance of 3.5411(8) Å. In the tetraphenyldiphosphane– and bromide–bridged dimer $Re_2Br_2(CO)_6P_2Ph_4$, the Re···Re separation was found to be 3.891 Å (J.L. Atwood *et al.*, *J. Chem. Soc.*, *Chem. Commun.*, **1976**, 441).

A contribution from four different research institutions (C. Gabbiani *et al.*, *Inorg. Chem.*, 2008, **47**, 2368) reports the structural characterization of four binuclear gold(III) μ–oxo bridged complexes of general formula $(Au_2(\mu–O)(NN))(PF_6)$, where NN is a bidentate nitrogen–based ligand (2,2'–bipyridine or a substituted 2,2'–bipyridine). The coordination geometry around the central metal atom of $5d^8$ electronic configuration is planar in all four compounds.

A collaboration of the Università di Roma "Tor Vergata" with the Karolinska Institutet of Stockholm has produced a paper (F. Cavalieri *et al.*, *Chem. Mater.*, 2008, **20**, 3254) describing a system capable of resulting in a gradual NO delivery, useful for the control of arterial thrombosis and cardiovascular diseases. The system consists in the formation of polymer–shelled microbubbles of nitrogen oxide.

A collaboration of two Departments of the Facoltà di Chimica Industriale, Università di Bologna, and the Centre de Recherche Claude Delorme, Air Liquide, France, has produced a paper (F. Basile *et al.*, *Chem. Commun.*, **2008**, 2917) which reports the preparation of nickel steam–reforming catalysts by electrodeposition.

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