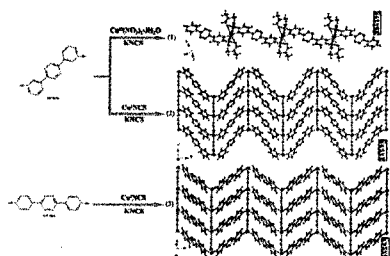


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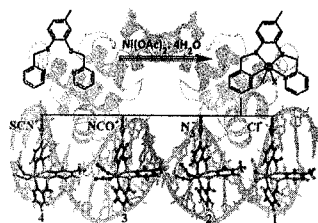
Regular Articles



Construction of copper-based coordination polymers with 1D chain, 2D plane and wavy networks: Syntheses, structures, thermal behavior and photoluminescence properties

Jianghua Li and Chi Zhang 1871–1882

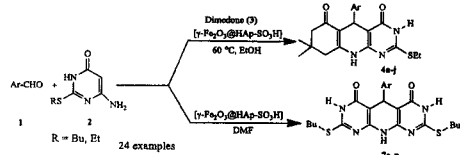
Three Cu-based Coordination Polymers (CP), 1-3 have been constructed in solution by diffusion reactions. CP 1 is 1D chain. CPs 2 and 3 are structural isomers. CP 2 exhibits 2D (4, 4) plane-like network, while CP 3 shows 2D saw-tooth wavy network. Photoluminescence properties of CPs 1-3 were investigated.



Nickel(II) complexes of N_2S_2 donor set ligand and halide/pseudohalides: Synthesis, crystal structure, DNA and bovine/human serum albumin interaction

Animesh Patra, Biplab Mondal, Buddhadeb Sen, Ennio Zangrando and Pabitra Chattopadhyay. 1883–1893

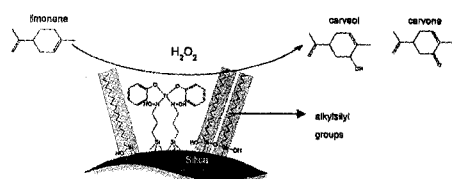
Four new neutral distorted octahedral nickel(II) complexes of general formula, $[Ni^{II}(L)X_2]$ have been synthesized and structurally characterized. The spectroscopic and physicochemical studies of interaction of the complexes with calf thymus DNA, BSA and HSA have also been included.



One-pot synthesis of novel pyrimido[4,5-*b*]quinolines and pyrido[2,3-*d*:6,5-*d'*]dipyrimidines using encapsulated- γ - Fe_2O_3 nanoparticles

Moona Mohsenimehr, Manouchehr Mamaghani, Farhad Shirini, Mehdi Sheykhani, Sima Abbaspour and Leila Shafei Sabet 1895–1904

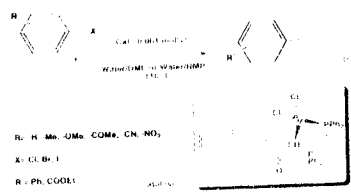
A series of novel pyrimido[4,5-*b*]quinolines and pyrido[2,3-*d*:6,5-*d'*]dipyrimidine derivatives was synthesized by using sulfonic acid supported on hydroxyapatite-encapsulated- γ - Fe_2O_3 [γ - Fe_2O_3 @HAp-SO₃H] as magnetically recoverable nanocatalyst in short reaction times and high yields.



Hydrophobic effect of silica functionalized with silylated Ti-salicylaldehyde complex on limonene oxidation by aqueous hydrogen peroxide

Lai Sin Yuan, Sheela Chandren, Jon Efendi, Chin Siong Ho and Hadi Nur. 1905–1917

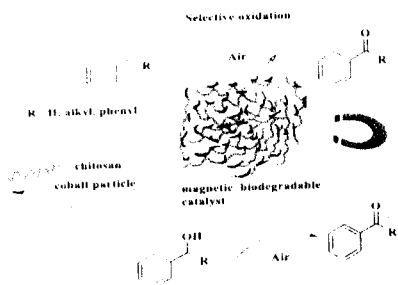
Silica functionalization with silylated Ti-salicylaldehyde complex was varied with octadecyltrimethoxysilane (OTMS) concentration to induce hydrophobicity. It was found that the higher degree of hydrophobicity has decreased the water content. Hence, the catalytic activity and TON for Ti increased. It showed that the surface property is important in the design of catalysts.



C(sp²)-C(sp²) cross coupling reaction catalyzed by a palladacycle phosphine complex: A simple and sustainable protocol in aqueous media

Seyyed Javad Sabounchei and Marjan Hosseinzadeh 1919-1926

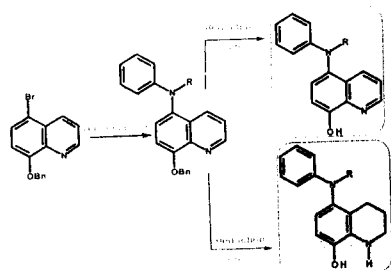
Application of the palladacycle complex in the Heck cross coupling reaction of various aryl halides with styrene and ethyl acrylate is reported.



Cobalt-chitosan: Magnetic and biodegradable heterogeneous catalyst for selective aerobic oxidation of alkyl arenes and alcohols

Ahmad Shaabani, Mahmoud Borjian Boroujeni and Mona Hamidzad Sangachin 1927-1935

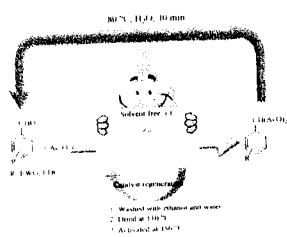
A biodegradable cobalt-chitosan as a magnetic heterogeneous catalyst was synthesized. Catalytic performance of cobalt-chitosan was tested by aerobic oxidation of alkyl arenes and alcohols. The results show that the catalyst exhibits excellent conversion for selective aerobic oxidation of alkyl arenes and alcohols with air as the only oxidant.



Synthesis of Novel 5-(N-Substituted-Anilino)-8-Hydroxyquinolines via Hartwig-Buchwald Amination Reaction

Walaa A E Omar and Osmo E O Hormi 1937-1943

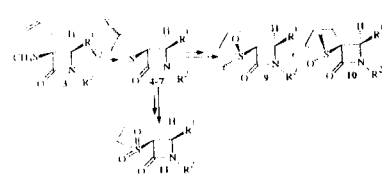
Three Novel 5-(N-Substituted-Anilino)-8-hydroxyquinolines are reported. The three 8-hydroxyquinoline derivatives were prepared by optimized Hartwig-Buchwald amination reaction followed by mild catalytic hydrogenation. Prolonged reduction time resulted in the formation of the corresponding 1,2,3,4-tetrahydro-8-hydroxyquinolines.



Zinc zirconium phosphate as an efficient catalyst for chemoselective synthesis of 1,1-diacetates under solvent-free conditions

Abdol R Hajipour and Hirbod Karimi 1945-1955

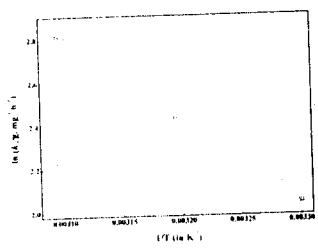
Zinc zirconium phosphate nanoparticles were prepared as a green and chemically stable catalyst. Selective protection and deprotection of aldehydes were performed under solvent-free condition with fair yields.



An efficient synthesis of spiro-β-lactams having sulfenyl, sulfinyl and sulfonyl moiety

Reshma, Renu Arora, Geeta Hundal, Aman Bhalla and S S Bari 1957-1966

A facile synthesis of novel sulfinyl and sulfonyl spiro-β-lactams through intramolecular cyclization of *cis*-3-allyl-3-methylthio-β-lactams is described.



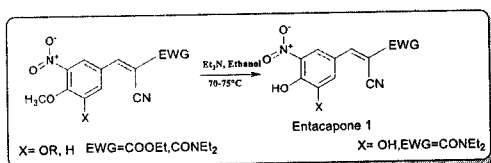
Chromium removal from aqueous media by superparamagnetic starch functionalized maghemite nanoparticles

P N Singh, D Tiwary and I Sinha 1967-1976

The low activation energy for the adsorption of Cr (VI) (31.54 kJ.mol⁻¹) suggests that it was physically adsorbed on starch functionalized maghemite nanoparticles. Given the reversible nature of such adsorption, the adsorbent was found to demonstrate very good recovery and recyclability, making it a relatively cheap eco-friendly alternative.

A new synthesis of Entacapone and report on related studies

Attimogae Shivamurthy Harisha, Suresh Parameshwar Nayak, Pavan M S, Shridhara K, Sundararaja Rao K, Rajendra K, Koteppa Pari, Sivaramkrishnan H, Guru Row T N and Kuppuswamy Nagarajan 1977-1991



A new synthesis of entacapone 1 of a designed precursor under very mild conditions is reported. Crystal structure of its Z isomer, NMR methods for establishment of E and Z geometry of benzylidene derivatives are also reported.

Preparation of Poly(MA-*alt*- α -olefin- $C_{6,8,12,18}$)/Silica Nanohybrids *via in situ* generated nanofillers for use as a dual function organonanofiller

Deniz Demircan, Günay Kibarer and Zakir M O Rzaevb . . 1993-2003

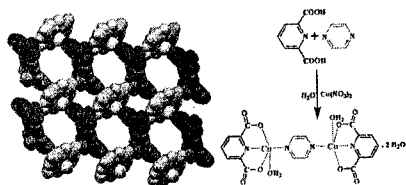
Poly(MA-*alt*- α -olefin)/silica nanohybrids were obtained by an *in situ* sol-gel process of TEOS *via* nano-level hybridization as promising and effective organo nano-fillers.



Copper inorganic-organic hybrid coordination compound as a novel L-cysteine electrochemical sensor: Synthesis, characterization, spectroscopy and crystal structure

Zohreh Derikvand and Azadeh Azadbakht. 2005-2014

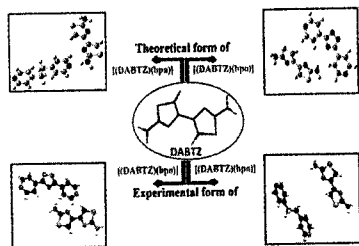
Dinuclear coordination compound of Cu(II), namely, $[Cu_2(pydc)_2(pz)(H_2O)_2] \cdot 2H_2O$, has been synthesized and characterized by elemental analysis, spectra (IR, UV-Vis), thermal (TG/DTG) analysis as well as single crystal X-ray diffraction. Electrochemical behavior of $[Cu_2(pydc)_2(pz)(H_2O)_2]$ on the surface of carbon nanotube (CNTs) glassy carbon electrode (GCE) was described and oxidation of cysteine on the surface of modified electrode was investigated.



Synthesis, experimental and theoretical studies of two cocrystals in 1:1 stoichiometric ratio from 4,4'-bithiazole-2,2'-diamine with two hydrogen acceptor molecules

Zohreh Rashidi Ranjbar and Ali Morsali 2015-2021

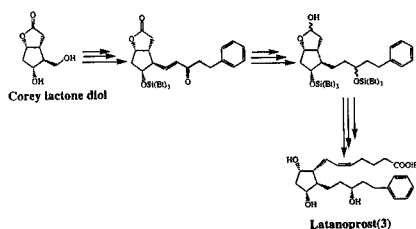
Novel cocrystals of DABTZ with two hydrogen acceptor molecules (bpa, bpo) are introduced. DFT calculations as theoretical studies have been done to compare with experimental data.



A Facile and Efficient Synthesis of (15R)-Latanoprost from Chiral Precursor Corey Lactone Diol

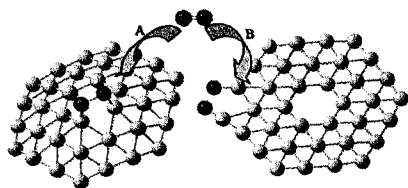
K Vijendhar, B Srinivas and Sathyanarayana Boodida. . . 2023-2028

A simple, convenient and convergent approach for the synthesis of (15R) latanoprost is reported with high stereo selectivity and improved yield from chiral precursor Corey lactone diol using Swern oxidation, allylic reduction and Wittig reaction conditions.



Adsorption of small gas molecules on B₃₆ nanocluster

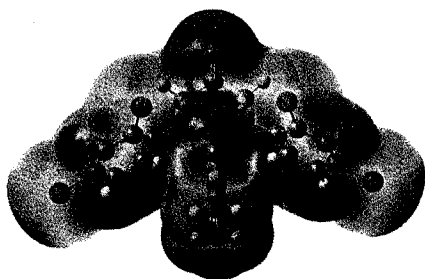
Younes Valadbeigi, Hossein Farrokhpour
and Mahmoud Tabrizchi 2029–2038



B₃₆ cluster is a single-atom thick boron cluster which has both planar and quasi-planar structures. When NO molecule is adsorbed on the inner boron atoms of the B₃₆ cluster, a B-B bond is broken and N-B and O-B bonds are formed (A). Adsorption of NO molecule on the outer (edge) boron atoms of the B₃₆ cluster is a dissociative adsorption (B).

Crystal Structure of 7,11-bis(2,4-dichlorophenyl)-2,4-dimethyl-2,4-diazaspiro[5.5]undecane -1,3,5,9-tetraone and its computational studies

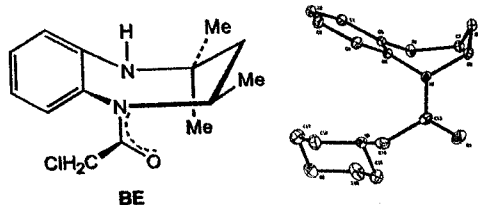
Mohammad Shahidul Islam, Assem Barakat,
Abdullah Mohammed Al-Majid, Saied M Soliman, Hazem A Ghabbour
and Hoong-Kun Fun. 2039–2050



The X-Ray single crystal structure and DFT computation of the 7,11-bis(2,4-dichlorophenyl)-2,4-dimethyl-2,4-diazaspiro[5.5]undecane -1,3,5,9-tetraone are discussed.

Synthesis, characterisation, stereochemistry and antimicrobial activity of N₅-piperazino- and N₅-morpholinoacetyl-2,2,4-trimethyl-1,5-benzodiazepines

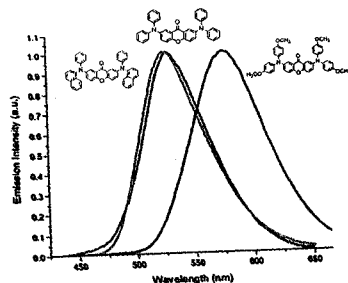
S Ponnuswamy, A Akila, D Deepa Rajakumari, V Shreevidhyaa Suresh
and G Usha. 2051–2061



The preferred conformations, antibacterial and antifungal activities of N₅-chloroacetyl-, N₅-piperazinoacetyl- and N₅-morpholinoacetyl-2,2,4-trimethyl-1H-1,5-benzodiazepines are reported.

Synthesis, photophysical, electrochemical and thermal investigation of Triarylamines based on 9H-Xanthen-9-one: Yellow-green fluorescent materials

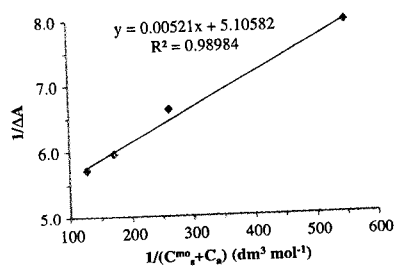
Bharat K. Sharma, Azam M. Shaikh and Rajesh M. Kamble . . . 2063–2071



The triarylamines containing 9H-Xanthen-9-one were synthesized via palladium-catalyzed C–N bond forming reaction in good yields. The absorption, emission, electrochemical and thermal properties of the dyes were studied and found to be significantly influenced by the nature of the peripheral amine segments attached to the xanthenone core.

Aggregation properties of levofloxacin in water and ethanol and its interaction with sodium dodecyl sulphate: A thermodynamic study

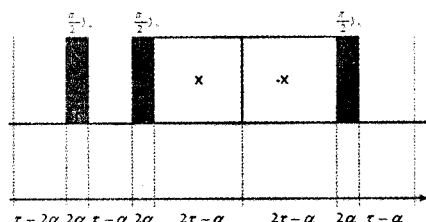
Muhammad Shakeel, Khalid Mehmood
and Mohammad Siddiq. 2073–2079



Critical micelle concentration of levofloxacin increases with temperature in aqueous solution and decreases in ethanol. Processes of micellization and adsorption of drug molecules at solution-air interface are spontaneous and results in increase in entropy. The drug shows strong interaction with anionic surfactant (SDS) due to solubilization of drug molecules between ionic head groups of micelles of SDS.

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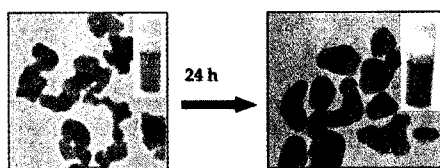


Theoretical approaches to control spin dynamics in solid-state nuclear magnetic resonance

Eugene Stephane Mananga 2081–2109

This article reviews the expansion theories currently used in solid-state NMR. These theories are alternative approaches that can be used to solve the time-dependent Schrodinger equation that still remains the central problem in spin dynamics of solid-state NMR.

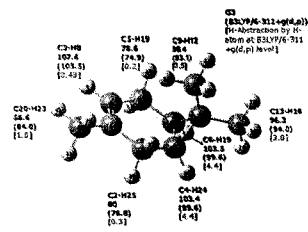
Regular Articles



Facile Growth of Multi-twined Au Nanostructures

Raj Kumar Bera, Asim Bhaumik and C Retna Raj 2111–2118

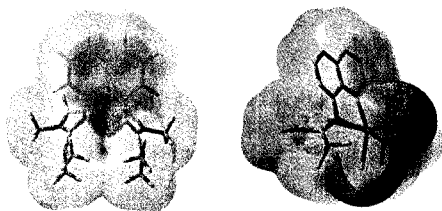
Growth of chain-like Au nanoaggregates and the spontaneous transformation to multi-twined Au nanostructure are described.



Pyrolysis of 3-carene: Experiment, Theory and Modeling

N Sharath, H K Chakravarty, K P J Reddy, P K Barhai and E Arunan 2119–2135

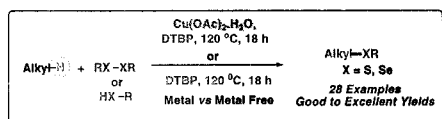
A detailed study on the pyrolysis of 3-carene showed that linear molecules were the primary products from its decomposition process. It has also been found that the C³ ring opening process was the initiation step both in 3-carene and C₁₀H₁₅ radical, formed by the H-dissociation/abstraction from 3-carene.



Molecular structure and DFT investigations on new cobalt(II) chloride complex with superbse guanidine type ligand

Saied M Soliman, Morsy A M Abu-Youssef, Jörg Albering and Ayman El-Faham 2137–2149

Cobalt(II) complex of 1,8-bis(tetramethylguanidino)naphthalene superbse showed distorted coordination geometry. The DFT calculations indicated that the ligand has two strongly basic guanidinic N-atoms available for coordination with the metal ion.



A comparative study of Cu(II)-assisted vs Cu(II)-free chalcogenation on benzyl and 2°/3°-cycloalkyl moieties

Santosh K Sahoo 2151–2157

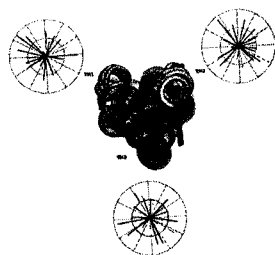
A comparative study of Cu(II)-assisted and Cu(II)-free chalcogenation to form sp³ C-S and sp³ C-Se bonds formation has been carried out.

Contents

Modeling the structure of SARS 3a transmembrane protein using a minimum unfavorable contact approach

S Ramakrishna, Siladitya Padhi and U Deva Priyakumar . . . 2159–2169

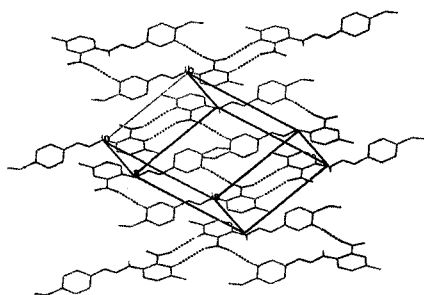
The structure of the membrane protein 3a from SARS coronavirus is modeled using an approach that minimizes unfavorable contacts between transmembrane domains. A structure for a complete monomeric form of the protein thereby proposed is able to account for the behavior of the protein reported in previous experimental studies.



Synthesis, characterization and crystal structure of four new asymmetric triazene ligands: An example of linear Hg^{II} complex with Hg... π secondary bonding interactions

Mohammad Reza Melardi, Fatemeh Baber Shamsi Mogoi, Ayoob Babai Sajirani, Jafar Attar Gharamaleki, Behrouz Notash and Mohammad Kazem Rofouei. 2171–2181

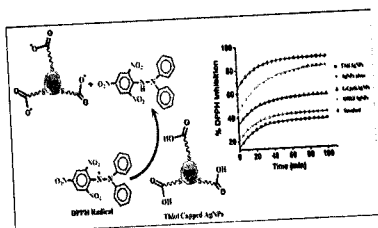
Synthesis, characterization and X-Ray crystal structures of a few asymmetric triazenes with (-NH-N=N-) moieties and a linear Hg^{II} complex (HgL₂) with Hg... π secondary bonding interactions are described.



Radical Scavenging Efficacy of Thiol Capped Silver Nanoparticles

Kumudini Chandraker, Sandeep Kumar Vaishnav, Rekha Nagwanshi and Manmohan L Satnami. 2183–2191

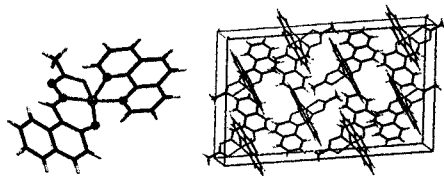
Percentage of 1,1-diphenyl 2-picryl hydrazil (DPPH) radical inhibition by silver nanoparticles (AgNPs) and different thiol (TA, L-Cys and GSH) capped AgNPs have been determined. The rate of scavenging capacity directly depends on the activity of thiol moiety.



Synthesis, characterization, X-ray crystal structure, electrochemical evaluation and anti-cancer studies of a mixed ligand Cu(II) complex of (E)-N'-((2-hydroxynaphthalen-1-yl)methylene)acetohydrazide

Iran Sheikshoaie, S Yousef Ebrahimipour, Mahdieh Sheikhshoaie, Maryam Mohamadi, Mehdi Abbasnejad, Hadi Amiri Rudbari and Giuseppe Bruno 2193–2200

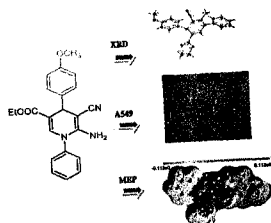
A new ternary Cu(II) complex, [Cu(L)(Phen)], containing a hydrazone ligand has been synthesized and fully characterized. Furthermore, anti-cancer activities of Cu(II) complex, the ligand (HL), Cu(NO₃)₂·3H₂O and 1,10-Phenanthroline were investigated against human breast cancer.

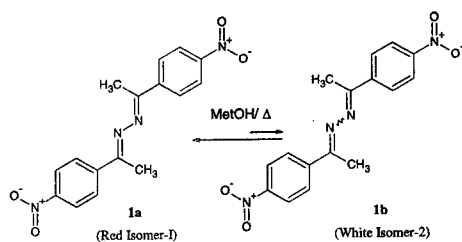


One-pot synthesis of N-aryl 1,4-dihydropyridine derivatives and their biological activities

Isaivani Dhinakaran, Vediappen Padmini and Nattamai Bhuvanesh. 2201–2209

Facile one-pot synthesis of N-aryl, 1,4-dihydropyridine derivatives was carried out by four component reaction. The new molecule exhibited better cytotoxicity and DPPH radical scavenging activity when compared to standard paclitaxel and ascorbic acid.

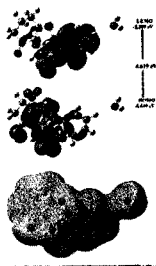




Origin and switch of different colors: Thermo-isomerism and crystal structure of (1E,2E)-bis[1-(4-nitrophenyl)ethylidene]hydrazine

Said Tighadouini, Smaail Radi, Loic Toupet, Muhammad Sirajuddin, Taibi Ben Hadda, Mehmet Akkurt, Ismail Warad, Yahia N Mabkhot and Saqib Ali. 2211–2216

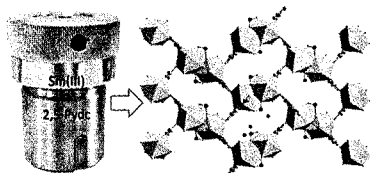
Hydrazone undergoes *trans-cis* isomerism when heated in an appropriate solvent. The reverse *trans-cis* thermo-isomerism can be driven also by light or thermally in the dark.



An investigation on structural, vibrational and nonlinear optical behavior of 4b,9b-dihydroxy-7,8-dihydro-4bH-Indeno[1,2-b]Benzofuran-9,10(6H,9bH)-dione: A DFT study

Tanveer Hasan, Sayed Hasan Mehdi, Raza Murad Ghalib, P K Singh and Neeraj Misra 2217–2223

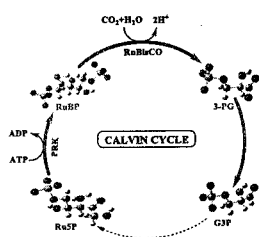
A detailed theoretical quantum chemical study on Dihydroxy-Dihydro-Indeno-Benzofuran-Dione, along with HOMO, LUMO energies, energy band gap, nonlinear optical (NLO) and thermodynamical properties are discussed.



Hydrothermal synthesis, crystal structure and luminescence property of a three dimensional Sm(III) coordination polymer with 2,5-pyridinedicarboxylic acid

Kranthi Kumar Gangu, Anima S Dadhich and Saratchandra Babu Mukkamala 2225–2230

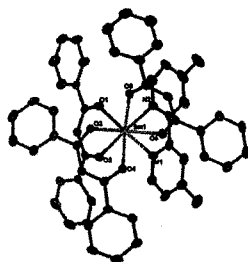
A novel three dimensional coordination polymer, [Sm(2,5-pydc)(NO₃)(H₂O)]·H₂O, built from dinuclear samarium(III) secondary building units exhibits yellow photoluminescence at 583 nm.



Quantum chemical investigation of thermochemistry in Calvin cycle

Dibyendu Mondal, Tumpa Sadhukhan, Iqbal A Latif and Sambhu N Datta 2231–2240

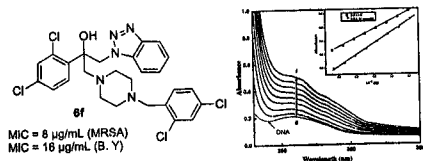
The controlling steps in Calvin cycle are theoretically found. Not only carbon dioxide assimilation but also the formation of G3P is thermodynamically favored. This helps in a steady plant growth. G3P partly converts into Ru5P. The conversion of Ru5P into RuBP is also favorable, which completes the full cycle.



Effect of second ligand on the luminescence of Samarium (III) dibenzoylmethane complexes: Syntheses, crystal structures, thermal analysis and luminescence study

Muhammad Idris Saleh, Min Yee Choo, Tai Wei Chan and Mohd R Razali 2241–2249

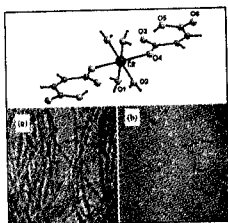
Luminescence studies show that under excitation of 418 nm, all Sm(III) ternary complexes emit orange luminescence and the strongest emission for all complexes is at 643 nm (15521 cm⁻¹) which can be assigned to ⁴G_{5/2} to ⁶H_{9/2} transition.



Synthesis and bioactive evaluations of novel benzotriazole compounds as potential antimicrobial agents and the interaction with calf thymus DNA

Yu Ren, Hui Zhen Zhang, Shao Lin Zhang, Yun Lei Luo, Ling Zhang, Cheng He Zhou and Rong Xia Geng 2251–2260

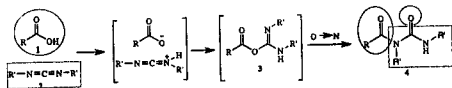
The novel synthesized benzotriazole derivatives could intercalate into DNA to form compound–DNA complex, which might block DNA replication and exert antimicrobial activities.



Structural, physicochemical characterization and antimicrobial activities of a new Tetraaqua bismaleato Iron(II) complex

Badiaa Essghaier, Jawher Abdelhak, Amani Naouar, Nourchene Toukebri, Mohamed Faouzi Zid and Najla Sadfi-Zouaoui 2261–2268

Tetraaqua bismaleato iron(II), $[\text{Fe}(\text{C}_4\text{H}_3\text{O}_4)_2(\text{H}_2\text{O})_4]$, a new antimicrobial agent used at $1000 \mu\text{g mL}^{-1}$ was able to destruct mycelial hyphae of *Trichophyton rubrum* (b) compared to long hyphae in the normal case without treatment (a).



Synthesis of *N*-acylurea derivatives from carboxylic acids and *N,N'*-dialkyl carbodiimides in water

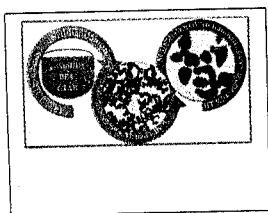
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Reactions of benzoic acid derivatives and (*E*)-cinnamic acid derivatives with *N,N'*-dialkylcarbodiimide proceed smoothly at room temperature and in neutral conditions to afford *N*-acylurea derivatives in high yields, and no side reactions were observed.

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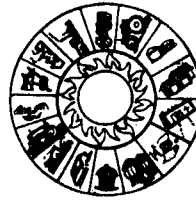
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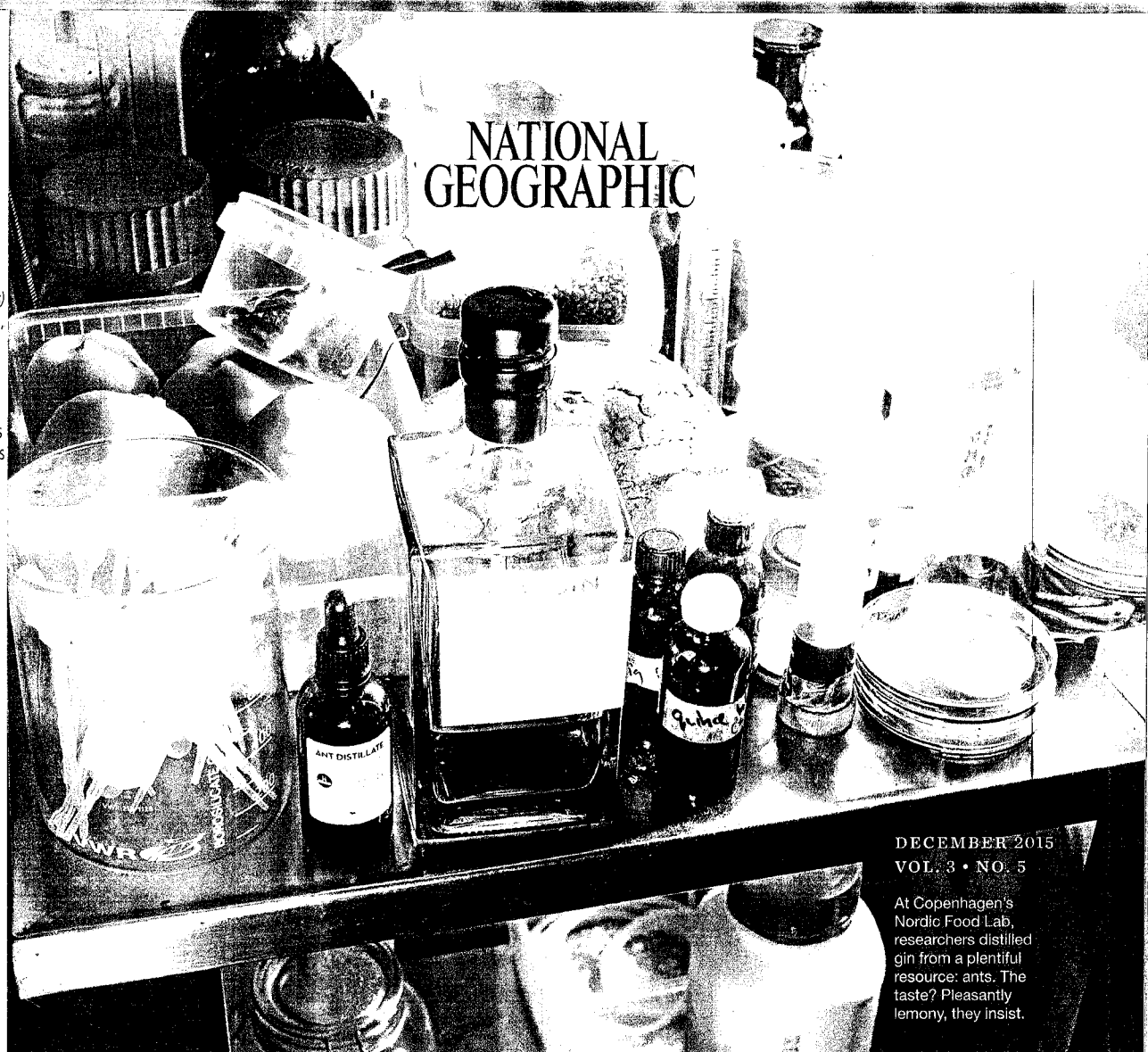
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Gulf of Mexico
Cozumel

NATIONAL GEOGRAPHIC



Pygmy Raccoon
(*Procyon pygmaeus*)
Size: Body length,
68 - 79 cm
Weight:
3.1 - 3.8 kg
Habitat: Prefers
mangrove forests
and coastal wetlands
**Surviving
number:**
Estimated at
320 - 950

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At Copenhagen's Nordic Food Lab, researchers distilled gin from a plentiful resource: ants. The taste? Pleasantly lemony, they insist.

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Taste receptors, volatiles, gustatory cortex: There's more to yum than you might think.
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The Virgin Mary is both a personal intercessor and a global sensation.

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The bird's-eye views of the skyline make it clear: This city may never sleep, but it surely does change.

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Leopards can adapt to living near humans—so well, in fact, that we may not know they're around.

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On the Cover The Virgin Mary has been depicted by many renowned artists. This detail is from the circa-1480 painting "The Virgin and the Child," by Sandro Botticelli. Poldi Pezzoli Museum Collection, Milan; photo by Malcangi. Image composed of eight photographs

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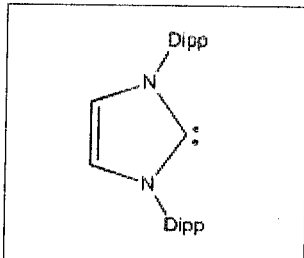
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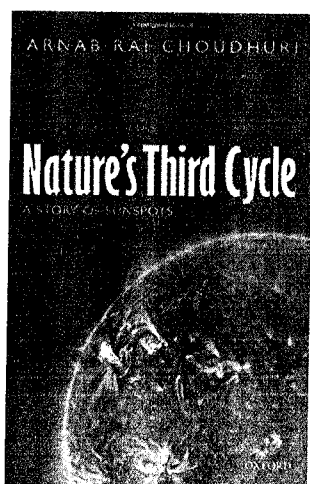
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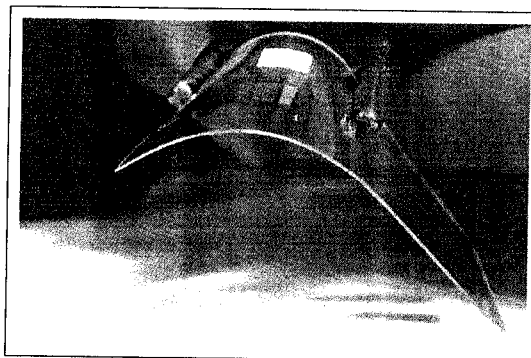


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