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Highlight Review

1,3-Dipolar Cycloaddition-based Synthesis of Diverse Heterocyclic Scaffolds

Wei Zhang

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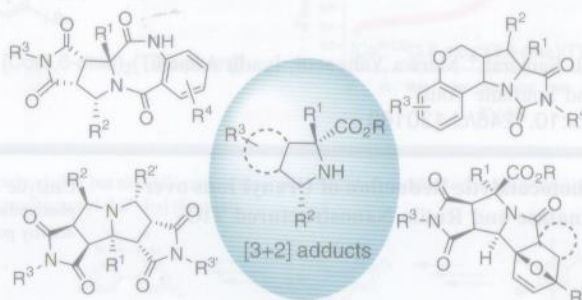
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Highlight Review

676 1,3-Dipolar Cycloaddition-based Synthesis of Diverse Heterocyclic Scaffolds

Wei Zhang
doi:10.1246/cl.130504

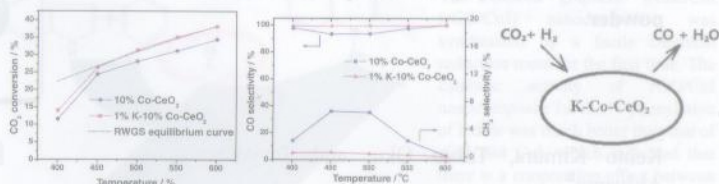


1,3-Dipolar cycloaddition reaction-based diversity-oriented synthesis developed from our research lab is highlighted. The initial [3 + 2] cycloaddition products are subjected to postcondensation modifications to afford heterocyclic scaffolds with substitutional, skeletal, and stereochemical variations. Multicomponent reactions and fluorous linker-facilitated separation are integrated to increase the efficiency of compound library synthesis.

Letter

682 K-Promoted Co-CeO₂ Catalyst for the Reverse Water-Gas Shift Reaction

Luhui Wang,* Hui Liu, Ying Chen, Renkun Zhang, and Shuqing Yang
doi:10.1246/cl.130137

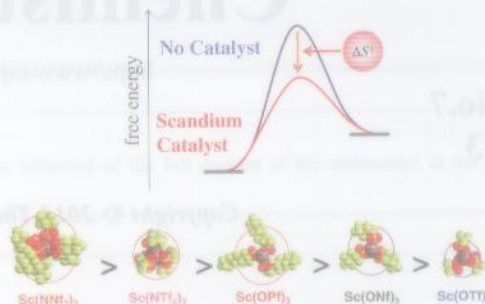


- 684 Dehydrative Esterification of Acetic Acid by Ethanol as a Model Reaction for Polyester Synthesis Catalyzed by Scandium Perfluoroalkanesulfonates and Bis(perfluoroalkane-sulfonyl)imides

Naoki Nomura and Akinori Takasu*

doi:10.1246/cl.130144

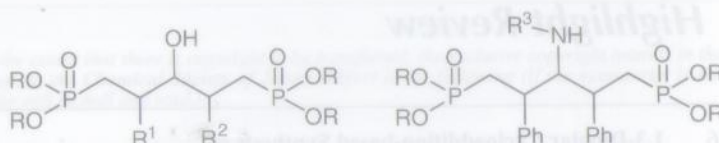
Electronic Supporting Information



- 687 Convenient First Synthesis of Hydroxy- and Amino- γ,γ' -bisphosphonates via Reduction and Reductive Amination of γ,γ' -Diphosphonyl Ketones

Ali Samarat,* Marwa Yahyaoui, Iyadh Aouani, and Soufiane Touil*

doi:10.1246/cl.130160

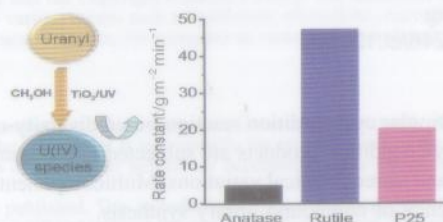


- 689 Photocatalytic Reduction of Uranyl Ions over Anatase and Rutile Nanostructured TiO_2

Catalytic performance of nanostructured TiO_2 for recovery of uranyl by heterogeneous photoreduction is presented. Results show that the rutile exhibits high specific photocatalytic activity per unit surface area than anatase and P25 under the same conditions.

Lihua Zhang, Hui Li, Le Li, Jian Deng, Weiyei Deng, and Yubao Zhao*

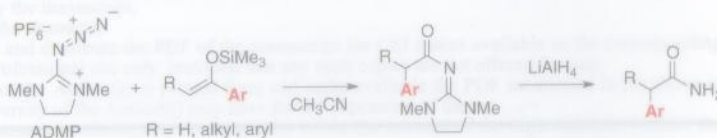
doi:10.1246/cl.130180



- 691 Synthesis of α -Arylcarboxylic Acid Amides from Silyl Enol Ether via Migratory Amidation with 2-Azido-1,3-dimethylimidazolinium Hexafluorophosphate

Mitsuru Kitamura,* Kento Murakami, Yuichiro Shiratake, and Tatsuo Okauchi

doi:10.1246/cl.130195

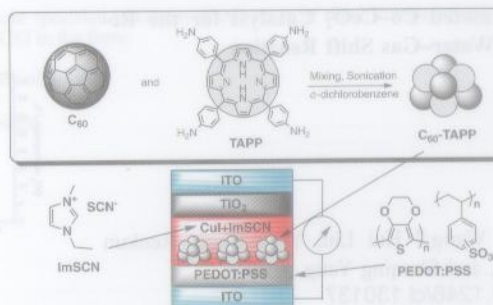


- 694 Preparation and Photovoltaic Application of Fullerene-Porphyrin Composite Micro-powder

Kento Kimura, Takeo Oku, and Tsuyoshi Akiyama*

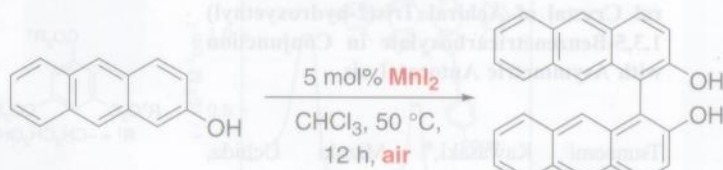
doi:10.1246/cl.130114

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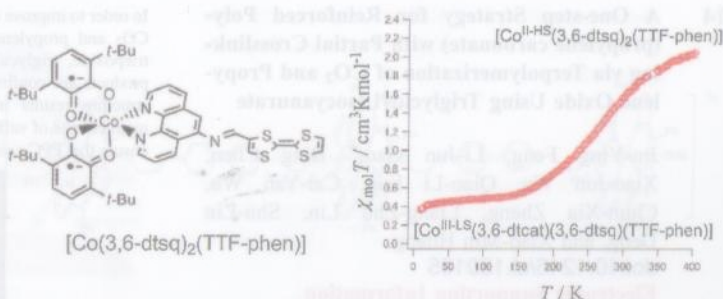
697 **MnI₂-catalyzed Dimerization of 2-Hydroxyanthracene**

Sicheng Zhang, Yanqing Wang, Zhiyi Song, Kiyohiko Nakajima, and Tamotsu Takahashi*
doi:10.1246/cl.130251

700 **Preparation and Valence Tautomeric Behavior of a Cobalt-Dioxolene Complex with a New TTF-functionalized Phenanthroline Ligand**

Shinji Kanegawa, Soonchul Kang, and Osamu Sato*
doi:10.1246/cl.130118

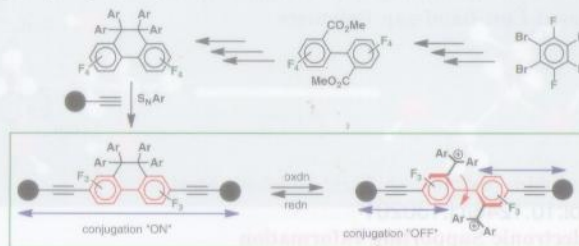
Electronic Supporting Information

703 **Redox Switching of Conjugation Length Using 9,9,10,10-Tetraaryl-9,10-dihydrophenanthrene as an ON/OFF Unit: Preparation, X-ray Structure, and Redox Properties of Perfluorobiphenyl Derivative and Its S_NAr Reactions to π -Extended Analogues**

Takanori Suzuki,* Hitomi Tamaoki, Ryo Katoono, Kenshu Fujiwara, Junji Ichikawa, and Takanori Fukushima
doi:10.1246/cl.130190

Electronic Supporting Information

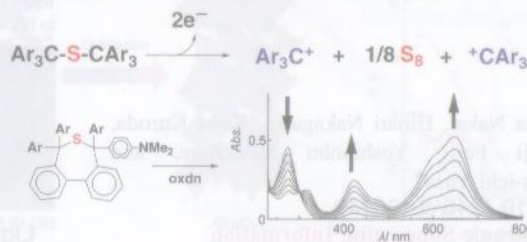
Not only visible but also UV-region absorptions can be modified upon electrolysis of 4,4'-diethynylbiphenyl-2,2'-diyl dications.

706 **Oxidative Conversion of Tetraaryldihydrodibenzothiepins into Elemental Sulfur and Stable Cationic Dyes Accompanied by Dual UV-vis and CD Spectral Changes**

Takanori Suzuki,* Takuma Kuroda, Hitomi Tamaoki, Sho Higasa, Ryo Katoono, Kenshu Fujiwara, Takanori Fukushima, and Hidetoshi Yamada
doi:10.1246/cl.130275

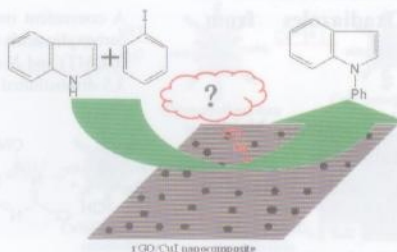
Electronic Supporting Information

Oxidation of bis(triarylmethyl) sulfides induces a desulfurization to form triarylmethyl cationic dyes, thus exhibiting chromic behavior with a vivid change in color.

709 **Reduced Graphene Oxide/CuI Nanocomposite: An Efficient and Recyclable Catalyst for the N-Phenylation of Indole**

Fang Fang, Kong-Lin Wu, Xiang-Zi Li, Chao Dong, Li Liu, and Xian-Wen Wei*
doi:10.1246/cl.130173

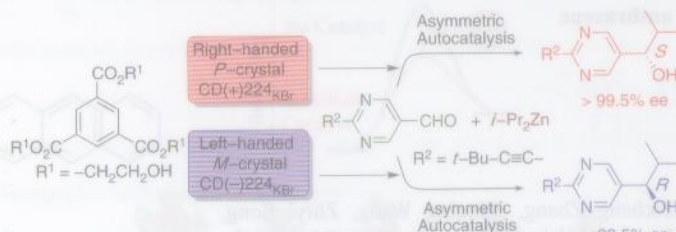
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The reduced graphene oxide/CuI (rGO/CuI) nanocomposite was synthesized by a facile chemical reduction route for the first time. The catalytic activity of rGO/CuI nanocomposite for the N-phenylation of indole was much better than that of rGO and CuI, which indicated that there is a cooperation effect between rGO and CuI.

- 711 **Enantioselective Synthesis Induced by the Helical Molecular Arrangement in the Chiral Crystal of Achiral Tris(2-hydroxyethyl) 1,3,5-Benzenetricarboxylate in Conjunction with Asymmetric Autocatalysis**

Tsuneomi Kawasaki,* Mizuki Uchida, Yoshiyasu Kaimori, Taisuke Sasagawa, Arimasa Matsumoto, and Kenso Soai*
doi:10.1246/cl.130185

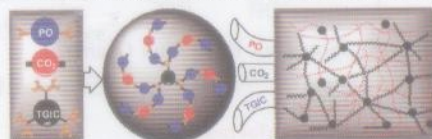


- 714 **A One-step Strategy for Reinforced Poly(propylene carbonate) with Partial Crosslinking via Terpolymerization of CO₂ and Propylene Oxide Using Triglycidyl Isocyanurate**

Jiu-Ying Feng, Li-Jun Gao,* Bing Chen, Xiao-Jun Wu, Qiao-Li Luo, Cai-Yan Wu, Chun-Xia Zheng, Liang-Zhu Lin, Shu-Lin Deng, and Xiao-Min Huang
doi:10.1246/cl.130165

Electronic Supporting Information

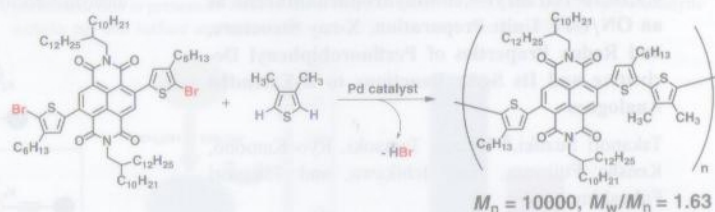
In order to improve thermal and mechanical properties of poly(propylene carbonate) (PPC) from CO₂ and propylene oxide (PO), which seriously limit PPC usefulness, a multifunctional triepoxide, triglycidyl isocyanurate, is used for terpolymerization with CO₂ and PO. The products are confirmed to have partly crosslinked structure and are yet thermalplastic. This structure results in the excellent decomposition temperature and tensile strength, with maintenance of sufficient toughness. These findings may develop a facile and effective way to ensure that PPC can be melt-processed without decomposition and used as a structural material.



- 717 **Palladium-catalyzed Direct Arylation Approach to Synthesize Naphthalene Bisimide-based Low-band-gap Polymers**

Kazuhiro Nakabayashi* and Hideharu Mori
doi:10.1246/cl.130201

Electronic Supporting Information

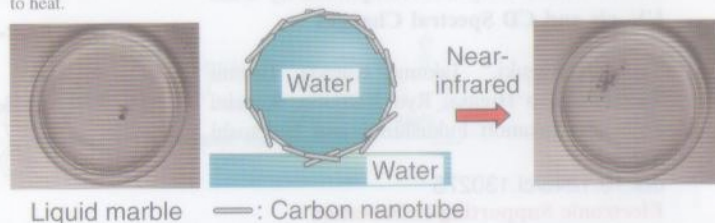


- 719 **Near-infrared-responsive Liquid Marbles Stabilized with Carbon Nanotubes**

Keita Nakai, Hinari Nakagawa, Keita Kuroda, Syuji Fujii, Yoshinobu Nakamura, and Shin-ichi Yusa*
doi:10.1246/cl.130240

Electronic Supporting Information

Near-infrared (NIR)-responsive liquid marbles were prepared using carbon nanotube (CNT) and fullerene (C₆₀) powders. The liquid marbles were transferred to the surface of bulk water. The liquid marbles immediately disintegrated upon NIR irradiation due to conversion of NIR energy to heat.

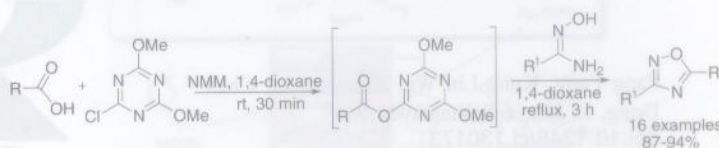


- 722 **A Simple and Straightforward Protocol to 3,5-Disubstituted 1,2,4-Oxadiazoles from Carboxylic Acids**

Tadikonda Ramu, Sarakula Prasanthi, Nakka Mangarao, Gajula Mahaboob Basha, Rayavarapu Srinuvasarao, and Vidavalur Siddaiah*
doi:10.1246/cl.130187

Electronic Supporting Information

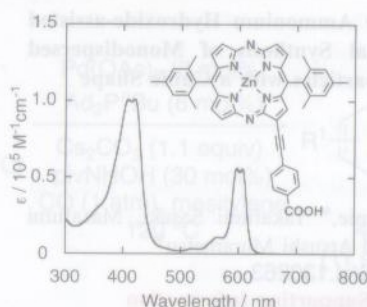
A convenient one-pot synthesis of 1,2,4-oxadiazoles is described. The condensation of carboxylic acids and amidoximes in the presence of 2-chloro-4,6-dimethoxy-1,3,5-triazine (CDMT) and *N*-methylmorpholine (NMM) has been employed to synthesize a variety of 3,5-disubstituted 1,2,4-oxadiazoles in good to excellent yields.



725 Synthesis and Photovoltaic Properties of Phenylethynyl-substituted Diazaporphyrin

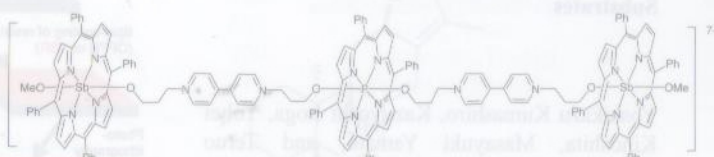
Kei Kurotobi, Kyosuke Kawamoto, Yuuki Toude, Yamato Fujimori, Yuriko Kinjo, Seigo Ito, Yoshihiro Matano, and Hiroshi Imahori*
doi:10.1246/cl.130212

Electronic Supporting Information



727 The Synthesis of a Heptacationic Porphyrin Trimer Connected with a Bipyridyl Linker on Axial Ligands

Tsutomu Shiragami,* Takahiro Mori, Jin Matsumoto, and Masahide Yasuda
doi:10.1246/cl.130184



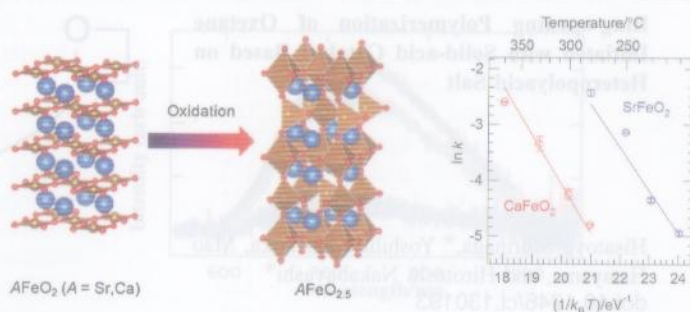
729 Selective Hydrogenolysis of Glycerol to 1,2-Propanediol Using Heterogeneous Copper Nanoparticle Catalyst Derived from Cu–Al Hydrotalcite

Tomoo Mizugaki, Racha Arundhathi, Takato Mitsudome, Koichiro Jitsukawa, and Kiyotomi Kaneda*
doi:10.1246/cl.130198

Electronic Supporting Information

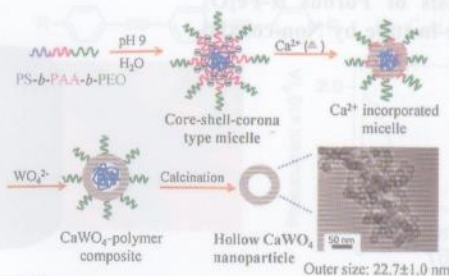
732 Oxygen Incorporation into Infinite-layer Structure $A\text{FeO}_2$ ($A = \text{Sr}$ or Ca)

Kazuya Matsumoto, Daisuke Kan, Noriya Ichikawa, Saburo Hosokawa, Hiroshi Kageyama, and Yuichi Shimakawa*
doi:10.1246/cl.130208

735 Synthesis of Nanometer-sized Hollow Calcium Tungstate Particles by Using Micelles of Poly(styrene-*b*-acrylic acid-*b*-ethylene oxide) as a Soft Template

Shuo Zhai, Yukitaka Manako, Shin-ichi Yusa, and Kenichi Nakashima*
doi:10.1246/cl.130210

Electronic Supporting Information

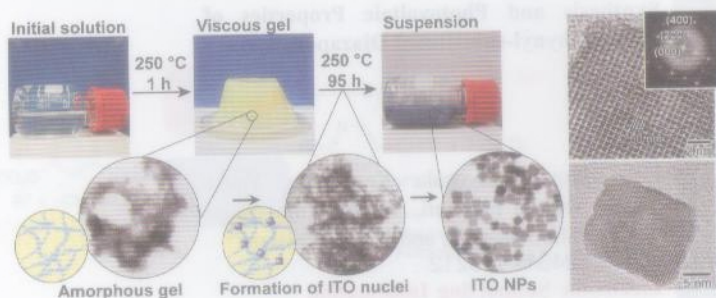


Hollow CaWO_4 nanoparticles obtained have a spherical shape with narrowly distributed outer diameter of 22.7 ± 1.0 nm and shell thickness of 6.7 ± 0.4 nm.

738 **Quaternary Ammonium Hydroxide-assisted Solvothermal Synthesis of Monodispersed ITO Nanoparticles with a Cubic Shape**

Kiyoshi Kanie,* Takafumi Sasaki, Masafumi Nakaya, and Atsushi Muramatsu*
doi:10.1246/cl.130263

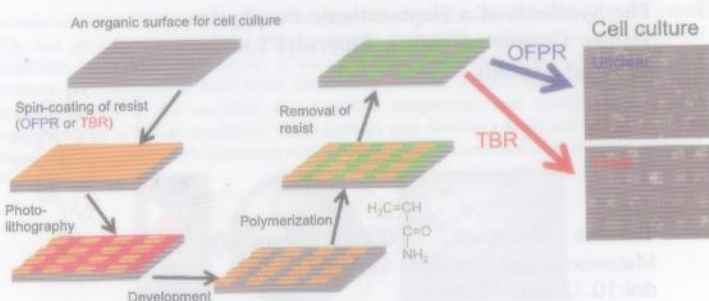
Electronic Supporting Information



741 **Development of Positive Photoresist for Controlling Cell Culture Shape on Organic Substrates**

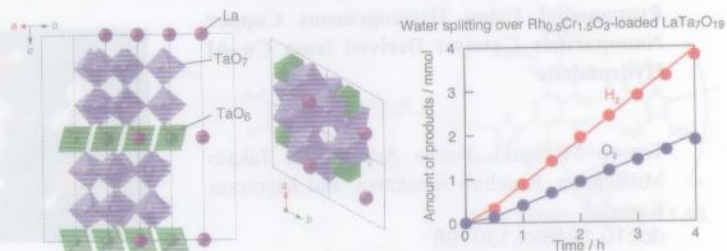
Yoshikazu Kumashiro, Kazuyoshi Itoga, Yohei Kinoshita, Masayuki Yamato, and Teruo Okano*
doi:10.1246/cl.130170

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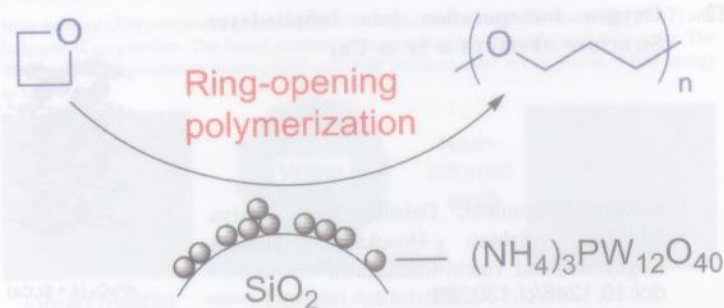
744 **Photocatalytic Water Splitting over LaTa₇O₁₉ Composed of TaO₇ Pentagonal Bipyramids and TaO₆ Octahedra**

Hideki Kato,* Arisa Takeda, Makoto Kobayashi, and Masato Kakihana
doi:10.1246/cl.130216



747 **Ring-opening Polymerization of Oxetane Initiated with Solid-acid Catalyst Based on Heteropolyacid Salt**

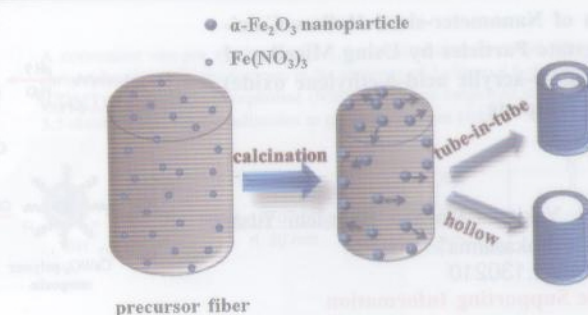
Hisatoyo Morinaga,* Yoshihito Nishioka, Mao Hatayama, and Hirotoshi Nakabayashi*
doi:10.1246/cl.130193



750 **Controllable Synthesis of Porous α -Fe₂O₃ Microtube and Tube-in-tube by Non-coaxial Electrospinning**

Leiming Lang and Zheng Xu*
doi:10.1246/cl.130167

Electronic Supporting Information

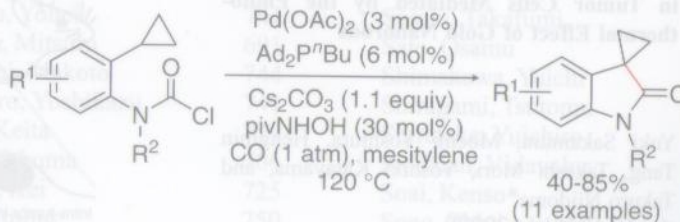


- 753 **Synthesis of Spirooxindoles from Carbamoyl Chlorides via Cyclopropyl Methine C(sp³)-H Activation Using Palladium Catalyst**

Chihiro Tsukano, Masataka Okuno, and Yoshiji Takemoto*

doi:10.1246/cl.130228

Electronic Supporting Information

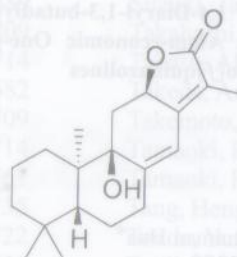


Editor's Choice

- 756 **Jolkinolide F, a Cytotoxic Diterpenoid from *Euphorbia jolkinii***

Norihito Maru,* Noriko Chikaraishi, Keisuke Yokota, Yoshinori Kawazoe, and Daisuke Uemura*

doi:10.1246/cl.130280

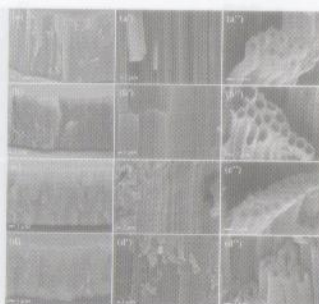


jolkinolide F

- 758 **Morphological Control of Anodic TiO₂ Nanotubes by the Modulation of Applied Potential**

So-Hee Lee, Hyun Sik Kim, Kwang-soon Ahn, and Soon Hyung Kang*

doi:10.1246/cl.130194

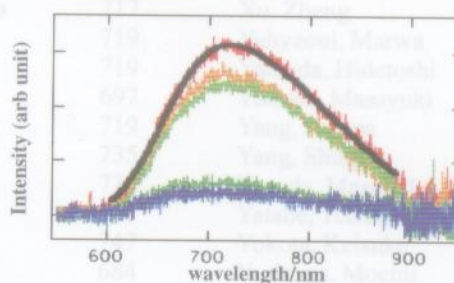


Bamboo-type TiO₂ nanotube arrays were developed by biasing the facile alternating voltage. The duration at 20 V in the AV mode considerably influenced the morphological properties. The 20 V (20 min) sample showed a high η of 0.2 % per thickness.

- 761 **Electrochemical Switching of Luminescence in Ru(II)-based Metallosupramolecular Polymer Device**

Yu Muronoi, Jian Zhang, Masayoshi Higuchi, and Hideyuki Maki*

doi:10.1246/cl.130158

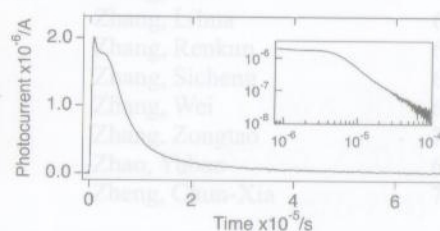


- 764 **Charge-carrier Transport in 1,4-Bis(phenylethynyl)benzene Derivatives Exhibiting Crystal Mesophases**

Tetsuo Yatabe,* Hajime Okumoto, Yuji Kawanishi, and Takahito Inoue

doi:10.1246/cl.130219

Electronic Supporting Information

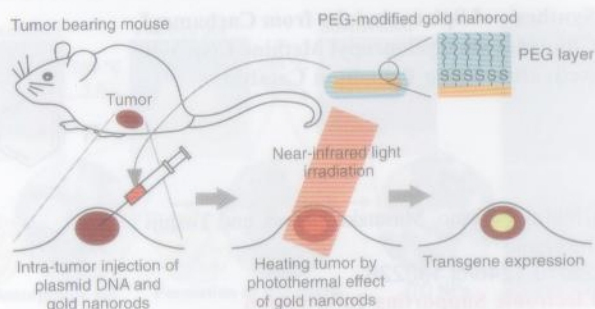


767 **Thermal Enhancement of Gene Transfection in Tumor Cells Mediated by the Photo-thermal Effect of Gold Nanorods**

Yuki Sakamura, Moemi Yoshiura, Hengmin Tang, Takeshi Mori, Yoshiki Katayama, and Takuro Niidome*

doi:10.1246/cl.130220

Electronic Supporting Information

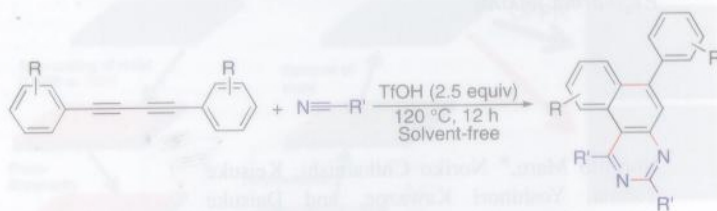


769 **Cycloaddition of 1,4-Diaryl-1,3-butadiynes with Nitriles: An Atom-economic One-pot Approach to Benzo[f]quinazolines**

Lichen Yang and Ruimao Hua*

doi:10.1246/cl.130206

Electronic Supporting Information



772 **Synthesis of $\text{Cu}_2(\text{OH})\text{PO}_4$ Crystals with Various Morphologies and Their Catalytic Activity in Hydroxylation of Phenol**

Weiwei Fu, Runwei Wang, Lele Wu, Hongbin Wang, Xu Wang, Aijing Wang, Zongtao Zhang,* and Shilun Qiu*

doi:10.1246/cl.130135

Electronic Supporting Information



Using different organic amines as the morphology-controlling agents, the $\text{Cu}_2(\text{OH})\text{PO}_4$ crystals showed several morphologies, including prism, octahedron, long rod, and sheet. When these $\text{Cu}_2(\text{OH})\text{PO}_4$ crystals were used as catalysts for phenol hydroxylation by H_2O_2 , they showed distinct activities.

