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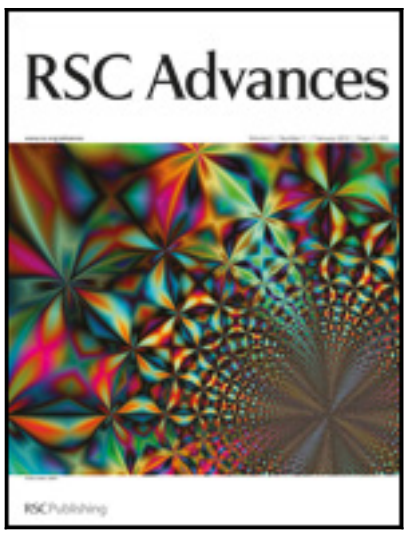

RSC Advances, 2013, Issue 14, Page 4457 to 4836

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RSC Adv., 2013,**3**, 4457-4458
DOI: 10.1039/C3RA90025H

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RSC Adv., 2013,**3**, 4459-4472
DOI: 10.1039/C3RA90027D

Review Article

[Recent advances in electrochemical glucose biosensors: a review]
Chao Chen, Qingji Xie, Dawei Yang, Hualing Xiao, Yingchun Fu, Yueming Tan and Shouzhuo Yao
RSC Adv., 2013,**3**, 4473-4491
DOI: 10.1039/C2RA22351A
Glucose detection is of great significance in biomedical applications. Principles, methods and recent developments in electrochemical glucose sensors are reviewed here.

Communications

[Atomic layer deposited thin films on N-doped CNTs]
Jian Liu, Yongji Tang, Biwei Xiao, Tsun-Kong Sham, Ruying Li and Xueliang Sun
RSC Adv., 2013,**3**, 4492-4495
DOI: 10.1039/C3RA23320K
Uniform aluminium phosphate thin films with controlled thickness and tunable composition were deposited through a new atomic layer deposition approach.

Microwave-assisted organocatalytic cross- of aldehydes

Dimitris Limnios and Christoforos G. Kokotos

RSC Adv., 2013,**3**, 4496-4499
DOI: 10.1039/C3RA00114H

An environmentally benign organocatalytic cross-aldol condensation of aldehydes under microwave irradiation in the absence of solvent is described.

A simple and straightforward synthesis of substituted 2-arylbenzimidazoles over gel

Amit K. Chaturvedi, Arvind S. Negi and Puja Khare

RSC Adv., 2013,**3**, 4500-4504
DOI: 10.1039/C3RA22435J

An efficient solid phase synthesis of 2-arylbenzimidazoles has been developed over silica gel surface.

Direct growth of carbon nanotubes on Ni/TiO_2 as next generation catalysts for photoreduction of CO_2 to methane by water under visible light irradiation

Wee-Jun Ong, Meei Mei Gui, Siang-Piao Chai and Abdul Rahman Mohamed

RSC Adv., 2013,**3**, 4505-4509
DOI: 10.1039/C3RA00030C

CNT@Ni/TiO_2 exhibited high visible-light absorption for the reduction of CO_2 owing to synergistic effects between TiO_2 and CNTs, allowing charge separation.

of Mn^{4+} to Mn^{2+} in $CaAl_{12}O_{19}$ by co-doping charge compensators to obtain tunable photoluminescence

Jing Lu, Yuexiao Pan, Jiaguo Wang, Xi'an Chen, Shaoming Huang and Guokui Liu

RSC Adv., 2013,**3**, 4510-4513
DOI: 10.1039/C3RA22938F

Reduction of Mn^{4+} to Mn^{2+} in $CaAl_{12}O_{19}$ does not complete in CO but can be realized through co-doping of trivalent ions.

Facile, controlled, large scale fabrication of novel capsule clusters

Yu Yang, Chaoyang Wang and Zhen Tong

RSC Adv., 2013,**3**, 4514-4517
DOI: 10.1039/C3RA22821E

Novel capsule clusters with a capsule-in-capsule structure were facilely fabricated through Pickering double emulsion templates.

Virtual half-metallicity at the CoS_2/FeS_2 interface induced by strain

S. Nazir and U. Schwingenschlögl

RSC Adv., 2013,**3**, 4518-4522
DOI: 10.1039/C3RA22184A

Spin polarization calculated for the interface between the Fe and Co atoms as a function of the tensile strain.

Chiral catalyzed enantioselective sulfamination of amino-alkenes

Lijun Li, Zequan Li, Deshun Huang, Haining Wang and Yian Shi

RSC Adv., 2013,**3**, 4523-4525
DOI: 10.1039/C3RA40307F

This paper describes a chiral phosphoric acid-catalyzed sulfamination of amino-alkenes to form optically active 2-substituted pyrrolidines and piperidines in up to 86% ee.

Regioselective synthesis of densely functionalized, enantiopure, sugar– hybrids as potential scaffolds for discovery

Mohammad Saquib, Irfan Husain, Ruchir Kant, Sanjeev Meena, H. M. Gauniyal, Sudhir Sinha, P. R. Maulik and Arun K. Shaw

RSC Adv., 2013,**3**, 4526-4530
DOI: 10.1039/C3RA22287J

Efficient regioselective synthesis of sugar–pyrazole hybrids, which have non-flat skeletons and multiple points of diversity as potential drug scaffolds, is described.

Effect of the second coordination sphere on new contrast agents based on cyclodextrin scaffolds for MRI signals

Hussein Idriss, François Estour, Ibrahim Zgani, Cécile Barbot, Anais Biscotti, Samuel Petit, Chantal Galaup, Marie Hubert-Roux, Lionel Nicol, Paul Mulder and Géraldine Gouhier

RSC Adv., 2013,**3**, 4531-4534
DOI: 10.1039/C3RA40314A

New contrast agents for MRI using polydentate cyclodextrins were synthesized using an innovative synthetic way. Studies quantified the positive influence of the second coordination shell effect on the MRI signal.

Comparison of *in vivo* and *in vitro* antioxidative parameters for eleven factors

Hiroko P. Indo, Ikuo Nakanishi, Kei Ohkubo, Hsiu-Chuan Yen, Minako Nyui, Sushma Manda, Ken-ichiro Matsumoto, Kiyoshi Fukuhara, Kazunori Anzai, Nobuo Ikota, Hirofumi Matsui, Yukiko Minamiyama, Akira Nakajima, Hiroshi Ichikawa, Shunichi Fukuzumi, Toshihiko Ozawa, Chiaki Mukai and Hideyuki J. Majima

RSC Adv., 2013,**3**, 4535-4538
DOI: 10.1039/C3RA22686G

The anti-apoptotic activity of eleven food factors was well-correlated with their ionization potentials calculated by DFT.

Direct preparation of semiconductor from natural pyrite
Lifeng Ding, Xing Fan, Xuemei Sun, Jun Du, Zuohua Liu and Changyuan Tao
RSC Adv., 2013,**3**, 4539-4543
DOI: 10.1039/C3RA00035D
A simple yet greener method was provided for preparing nanosulfide semiconductors from widely existing natural sulfide ores, without any chemical conversion and energy consumption.

Papers

Magneto-fluorescent -mediated siRNA for gastrin-releasing receptor silencing in neuroblastoma
Jingbo Qiao, Tu Hong, Taylor S. Triana, Honglian Guo, Dai H. Chung and Ya-Qiong Xu
RSC Adv., 2013,**3**, 4544-4551
DOI: 10.1039/C3RA23023F
From themed collection Cancer (nano)technology
2013
A magneto-fluorescent carbon nanotube-mediated siRNA system has been delivered to silence gastrin-releasing peptide receptor in neuroblastoma.

Scope and limitations of diastereoselective aziridination reactions using stabilised or -bromo nucleophiles

Stefan Aichhorn, Guddeangadi N. Gururaja, Michael Reisinger and Mario Waser

RSC Adv., 2013,**3**, 4552-4557
DOI: 10.1039/C3RA40429C

The applicability of easily available ammonium salts to access aziridines *via* an ammonium ylide pathway was carefully investigated and compared with classical *aza*-Darzens approaches using -bromo carbonyl nucleophiles.

Recovering palladium from its surplus complexes in research laboratories by solid state thermal treatment

José Pérez, José Luis Serrano, Jorge Enrique Granados and Luis Alberto Alcolea

RSC Adv., 2013,**3**, 4558-4567
DOI: 10.1039/C3RA22448A

Solid thermal treatment allows recovering of Pd from its complexes. The presence of phosphorus induces a drastic change in the thermal behavior.

Enhanced of conducting co-polymerised from derivatives

Bartlomiej Kolodziejczyk, David Mayevsky and Bjorn Winther-Jensen

RSC Adv., 2013,**3**, 4568-4573
DOI: 10.1039/C3RA23120H

It is shown that the absorption properties in the visible region of polymer films based on mixtures of terthiophene and bithiophene may be tailored to suit the needs of optical devices such as solar cells, sensors and organic light emitting diodes.

Facile preparation of polyaniline nanofibers modified bentonite nanohybrid for gas sensor application

Sujata Pramanik, Gautam Das and Niranjan Karak

RSC Adv., 2013,**3**, 4574-4581
DOI: 10.1039/C3RA22557G

Thin film bentonite/PAni nanofibers (0.23 wt%) were used as resistive gas sensors to detect volatile and toxic gases.

-controlled conformational bias of tetracycline

Laramie P. Jameson and Sergei V. Dzyuba

RSC Adv., 2013,**3**, 4582-4587
DOI: 10.1039/C3RA22419H

The aggregation of ionic liquids controls the conformation of tetracycline.

effect on the luminescence of gold nanodots and its application for detection of total mercury ions in biological samples

Hsiang-Yu Chang, Huan-Tsung Chang, Yu-Lun Hung, Tung-Ming Hsiung, Yang-Wei Lin and Chih-Ching Huang

RSC Adv., 2013,**3**, 4588-4597

DOI: 10.1039/C3RA23036H

Control of the ligand density of 11-mercaptoundecanoic acid (11-MUA) on gold nanodots (Au NDs), allows detection of total inorganic and organic mercury ions in urine and plasma samples, as well as in fish.

Optical lineshapes for dimers of polymethine : dozy-chaos theory of quantum transitions and Frenkel exciton effect

Vladimir V. Egorov

RSC Adv., 2013,**3**, 4598-4609
DOI: 10.1039/C3RA22148B

The optical absorption lineshapes for dimers of polymethine dyes, as well as the lineshapes in monomer–dimer concentration equilibria, are explained by taking into account the Frenkel exciton effect in the dozy-chaos theory of quantum transitions.

catalyzed Ugi three-component reaction in aqueous media

Atul Kumar, Deepti Saxena and Maneesh Kumar Gupta

RSC Adv., 2013,**3**, 4610-4612
DOI: 10.1039/C3RA23087B

$B(OH)_3$ catalyzed Ugi three-component reaction for the synthesis of 2-arylamino-2-phenylacetamides has been developed using aldehydes, amines, and isocyanides in water. The synthesized 2-arylamino-2-phenylacetamides were efficiently converted into on -amino acid *via* acidic hydrolysis.

Mild and efficient capture and functionalisation of CO_2 using silver(I) oxide and application to ^{13}C-labelled dialkyl carbonates

Gemma A. Tunbridge, Riccardo Baruchello and Lorenzo Caggiano

RSC Adv., 2013,**3**, 4613-4621
DOI: 10.1039/C3RA23281F

Gaseous CO_2 reacts with alkyl iodides and alcohols at ambient temperatures and pressures to generate dialkyl carbonates in the presence of silver(I) oxide. Use of ^{13}C-enriched CO_2 affords ^{13}C-carbonyl-labelled dialkyl carbonates with excellent control and without the need for specialised equipment.

Effect of microstructure on the properties of solutions

Janelle Tam, Juewen Liu and Zhaoling Yao

RSC Adv., 2013,**3**, 4622-4627
DOI: 10.1039/C3RA22582H

The formation of micelles in aqueous solution led to a double exponential kinetic trend. Further, an increase in micellar size increased the rate of radical scavenging reaction.

Facile synthesis and superior supercapacitor performances of Ni_2P/rGO nanoparticles

Cuihua An, Yijing Wang, Yaping Wang, Guang Liu, Li Li, Fangyuan Qiu, Yanan Xu, Lifang Jiao and Huatang Yuan

RSC Adv., 2013,**3**, 4628-4633
DOI: 10.1039/C3RA00079F

Ni_2P/rGO composites were successfully synthesized, exhibiting superior specific capacitance, rate capability and excellent electrochemical cycling stability.

Electrochemical dicarboxylation of conjugated as an efficient valorization of carbon dioxide

Roman Matthessen, Jan Fransaer, Koen Binnemans and Dirk E. De Vos

RSC Adv., 2013,**3**, 4634-4642
DOI: 10.1039/C3RA00129F

A simple and efficient method is developed to electrochemically incorporate CO_2 in conjugated linoleic acid methyl esters. The corresponding fatty triacids are obtained in yields of 80%.

Synthesis of 3,4-dihydro-2*H*-1,4-benzo[*b*]thiazine derivatives *via* DABCO-catalyzed one-pot three-component condensation reactions

Jiaping Wu, Yongjia Shang, Cuie Wang, Xinwei He, Zhenglei Yan, Manman Hu and Fuyin Zhou

RSC Adv., 2013,**3**, 4643-4651
DOI: 10.1039/C3RA00123G

An efficient DABCO-catalyzed three-component reaction for the synthesis of 3,4-dihydro-2*H*-1,4-benzo[*b*]thiazines with good to excellent yields under mild reaction conditions is reported.

Dual release nanocomposites prepared using a combination of electrospraying and

Deng-Guang Yu, Gareth R. Williams, Xia Wang, Xin-Kuan Liu, Hao-Lin Li and SW Annie Bligh

RSC Adv., 2013,**3**, 4652-4658
DOI: 10.1039/C3RA40334C

A modified coaxial electrospinning process, essentially a combination of electrospraying and electrospinning, was exploited for the preparation of core–sheath nanocomposites to provide dual drug release profiles.

Green modification of natural fibres with nanocellulose

Dasong Dai and Mizi Fan

RSC Adv., 2013,**3**, 4659-4665
DOI: 10.1039/C3RA22196B

The present paper presents a green process of two-step nanocellulose modification of hemp fibres and investigates the mechanisms of the efficacy of the modification.

Autocatalytic- based on self-decomposing templates: a facile approach toward hollow metal nanostructures

Yida Deng, Haoran Wang, Liye Xu, Yating Wu, Cheng Zhong and Wenbin Hu

RSC Adv., 2013,**3**, 4666-4672
DOI: 10.1039/C3RA40445E

Hollow metal nanostructures have received increasing interest because they exhibit unique chemical and physical properties different from their solid counterparts.

An alternative strategy to construct interfaces in bulk thermoelectric material: nanostructured heterophase Bi_2Te_3/Bi_2S_3

Mi-Kyung Han, Sol Kim, Ha-Yeong Kim and Sung-Jin Kim

RSC Adv., 2013,**3**, 4673-4679
DOI: 10.1039/C3RA23197F

We show a novel single step approach to fabricate nanoscaled heterophase interface in bulk thermoelectric materials through the bottom-up strategy and investigate their thermoelectric properties.

Structure control of ultra-large graphene sheets by the Langmuir–Blodgett method

Qingbin Zheng, Lifang Shi, Peng-Cheng Ma, Qingzhong Xue, Jing Li, Zhihong Tang and Junhe Yang

RSC Adv., 2013,**3**, 4680-4691
DOI: 10.1039/C3RA22367A

As a unique type of soft building block, graphene oxide (GO) dispersions are easy to process to produce electronic devices.

Synthesis of multi- functionalized hydrogel for preparation of noble metal : utilization as highly active and recyclable in of nitroaromatics

Lidong Zhang, Sudan Zheng, Dong Eun Kang, Jin Young Shin, Hongsuk Suh and Il Kim

RSC Adv., 2013,**3**, 4692-4703
DOI: 10.1039/C3RA22864A

Novel metal nanoparticles encapsulated in multiamine-functionalized hydrogels in situ exhibited excellent catalytic activity in the reduction of nitroaromatics.

Analogues of *NHc* and *NHc*: syntheses, characterization, antimicrobial, antituberculosis, and antitumor activity

Pandaram Palanisamy and Sudalaiandi Kumaresan

RSC Adv., 2013,**3**, 4704-4715
DOI: 10.1039/C3RA23124K

The title compounds were synthesized, characterized, and evaluated for their biological activity.

Poly(*N*-vinylpyrrolidone)-grafted poly(dimethylsiloxane) surfaces with tunable microtopography and anti-biofouling properties

Xiaoli Liu, Weifang Tong, Zhaoqiang Wu and Wenwen Jiang

RSC Adv., 2013,**3**, 4716-4722
DOI: 10.1039/C3RA23069D

Novel antifouling (AF)/fouling release (FR) surfaces based on poly(*N*-vinylpyrrolidone) (PVP)-grafted poly(dimethylsiloxane) (PDMS) have been developed using surface-initiated atom transfer radical polymerization of *N*-vinylpyrrolidone (NVP).

Synthesis of 2-selenyl(sulfenyl)benzofurans *via* Cu-catalyzed tandem reactions of 2-(*gem*-dibromovinyl)phenols with diorganyl diselenides(disulfides)

Jie Liu, Wei Chen and Lei Wang

RSC Adv., 2013,**3**, 4723-4730
DOI: 10.1039/C3RA23361H

The synthesis of 2-selenyl(sulfenyl)benzofurans has been accomplished through a copper(I)-catalyzed tandem reaction of 2-(*gem*-dibromovinyl)phenols with diorganyl diselenides and disulfides.

Novel diastereoselective synthesis of spiropyrrolidine- derivatives as anti-breast cancer agents

Atul Kumar, Garima Gupta, Suman Srivastava, Ajay Kumar Bishnoi, Ruchi Saxena, Ruchir Kant, Ranjana S. Khanna, Prakas R. Maulik and Anila Dwivedi

RSC Adv., 2013,**3**, 4731-4735
DOI: 10.1039/C3RA21595D

A novel diastereoselective synthesis of spiropyrrolidine-oxindoles *via* a one-pot multicomponent reaction and their anti-breast cancer activity.

Specific stress responses to cadmium, arsenic and mercury appear in the metallophyte *Silene vulgaris* when grown hydroponically

Juan Sobrino-Plata, Joaquín Herrero, Sandra Carrasco-Gil, Araceli Pérez-Sanz, Carmen Lobo, Carolina Escobar, Rocío Millán and Luis E. Hernández

RSC Adv., 2013,**3**, 4736-4744
DOI: 10.1039/C3RA40357B

Characterisation of the specific stress signature in the metallophyte *Silene vulgaris* exposed to arsenic, mercury and cadmium.

Supramolecular cooperative-assembly of polyelectrolyte films

Rungsima Chollakup, Wirasak Smitthipong and Arkadiusz Chworos

RSC Adv., 2013,**3**, 4745-4749
DOI: 10.1039/C3RA22884C

Morphological property depends on the structure of the polymer: step-like structure (left) is only found on a double-stranded DNA–DDAB film but not on a random-coil poly(styrene sulfonate)–DDAB film (right).

One-pot thermally chemocontrolled double Diels–Alder strategies. A route to [4 + 2] functionalisation/[4 + 2] of C_{60}

Marios S. Markoulides, Georgios I. Ioannou, Manolis J. Manos and Nikos Chronakis

RSC Adv., 2013,**3**, 4750-4756
DOI: 10.1039/C3RA23327H

A practical and efficient method for thermally chemocontrolled double Diels–Alder processes in a one-pot manner starting from 3,4-bis(bromomethyl)-2,5-dihydrothiophene-1,1-dioxide is presented.

Are compliance constants ill-defined descriptors for weak interactions?

Jörg Grunenberg and Giampaolo Barone

RSC Adv., 2013,**3**, 4757-4762
DOI: 10.1039/C3RA22866E

Compliance constants can be used as a diagnostic test to identify eminent hydrogen bonds.

Low-temperature synthesis of luminescent and mesoporous -$NaYF_4$ microspheres *via* -mediated solvothermal route

Xuesong Qu, Guohui Pan, Hyun Kyoung Yang, Yeqing Chen, Jong Won Chung, Byung Kee Moon, Byung Chun Choi, Jung Hyun Jeong and Kiwan Jang

RSC Adv., 2013,**3**, 4763-4770
DOI: 10.1039/C3RA23028G

A facile one-step solvothermal strategy of synthesizing monodisperse, luminescent and mesoporous hexagonal $NaYF_4$ microspheres at low temperature is offered.

Single-step pyrolytic preparation of Mo_2C/graphitic carbon nanocomposite as carrier for the direct liquid-feed cells

Ruihong Wang, Jun Yang, Keying Shi, Bo Wang, Lei Wang, Guohui Tian, Buhe Bateer, Chungui Tian, Peikang Shen and Honggang Fu

RSC Adv., 2013,**3**, 4771-4777
DOI: 10.1039/C3RA23391J

This work presents a simple and low-cost approach to prepare Mo_2C/GC as catalyst carrier for direct liquid-feed fuel cells.

Effect of supercritical carbon dioxide on molecular aggregation states of side chains of semicrystalline poly{2-(perfluorooctyl)ethyl acrylate} brush thin films

Hiroki Yamaguchi, Peter Gin, Hiroshi Arita, Motoyasu Kobayashi, Steve Bennett, Sushil K. Satija, Mitsunori Asada, Tadanori Koga and Atsushi Takahara

RSC Adv., 2013,**3**, 4778-4785
DOI: 10.1039/C3RA22692A

Highly ordered molecular aggregation structures of perfluoroalkyl chains of densely-grafted poly{2-(perfluorooctyl)ethyl acrylate} brush thin films were induced by using $scCO_2$ as an effective plasticizer.

Revealing the chemistry of biomass by means of tunable synchrotron photoionisation-mass spectrometry

Anthony Dufour, Junjie Weng, Liangyuan Jia, Xiaofeng Tang, Baptiste Sirjean, René Fournet, Hervé Le Gall, Nicolas Brosse, Francis Billaud, Guillain Mauviel and Fei Qi

RSC Adv., 2013,**3**, 4786-4792
DOI: 10.1039/C3RA40486B

“Imaging” biomass conversion: Synchrotron light ionisation is used for the first time to investigate biomass pyrolysis. This soft and tunable ionisation source coupled to *ab initio* calculations reveals new chemical mechanisms.

Functionalization of BODIPY dyes at 2,6-positions through formyl groups

Shilei Zhu, Jianheng Bi, Giri Vegesna, Jingtuo Zhang, Fen-Tair Luo, Loredana Valenzano and Haiying Liu

RSC Adv., 2013,**3**, 4793-4800
DOI: 10.1039/C3RA22610G

A 2,6-diformyl-BODIPY dye has been modified by transforming its formyl groups at the 2,6-positions into different functional groups such as hydroxyl, carboxylic acid, cyano, nitro and oxime groups, resulting in a series of new BODIPY dyes.

Fabrication of panchromatic -sensitized solar cells using pre-dye coated TiO_2 by a simple dip coating technique

Jeongmin Lim, Minoh Lee, Suresh Kannan Balasingam, Junhee Kim, Donghwan Kim and Yongseok Jun

RSC Adv., 2013,**3**, 4801-4805
DOI: 10.1039/C3RA40339D

An appropriate method of pre-dye coating of TiO_2 nanoparticles (NPs) and a facile approach of a dip coating technique have been adopted for the fabrication of panchromatic dye-sensitized solar cells (DSSC).

High yield of from the esterification of renewable valeric acid catalyzed by ionic liquids

Lin-Lin Dong, Ling He, Guo-Hong Tao and Changwei Hu

RSC Adv., 2013,**3**, 4806-4813
DOI: 10.1039/C3RA23034A

Ethyl valerate (EV) as a possible second generation biofuel was produced *via* esterification in high conversion (>99.9%) and selectivity (100%).

Determination of solubility parameters of single-walled and using a finite-length model

Kunsil Lee, Hyeong Jun Lim, Seung Jae Yang, Yern Seung Kim and Chong Rae Park

RSC Adv., 2013,**3**, 4814-4820
DOI: 10.1039/C3RA40382C

Van der Waals and electrostatic solubility parameters for pristine SWCNTs and pristine DWCNTs with variation in diameter were determined using a finite-length model.

TS-1 as an effective diffusion barrier for highly stable Pd membrane supported on macroporous -Al_2O_3 tube

Xiaobin Wang, Xiaoyao Tan, Bo Meng, Xiongfu Zhang, Qi Liang, Hui Pan and Shaomin Liu

RSC Adv., 2013,**3**, 4821-4834
DOI: 10.1039/C3RA23086D

A dense Pd membrane with good stability was prepared on modified -Al_2O_3 tubes with TS-1 film as intermediate.

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Back cover

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DOI: 10.1039/C3RA90026F