

CHINESE JOURNAL OF  
APPLIED CHEMISTRY

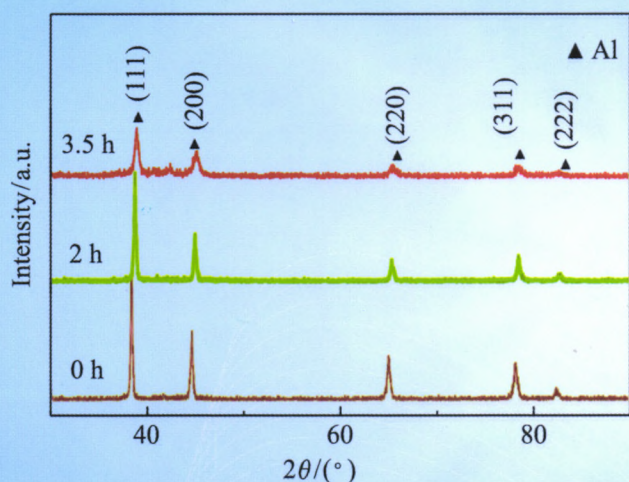
应用化学

Yingyong Huaxue

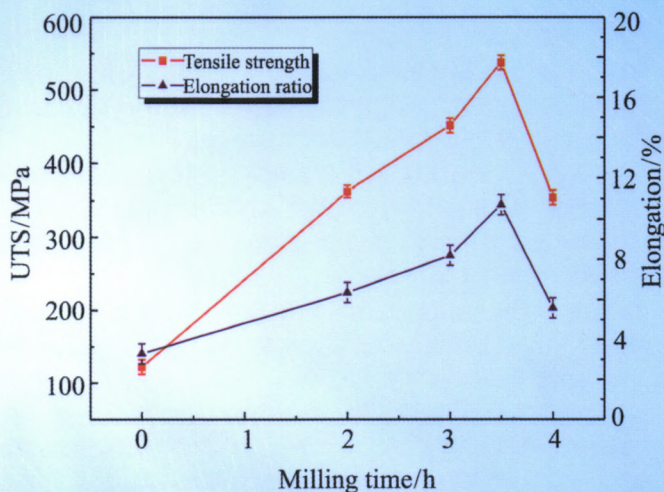
2015

Volume 32 Issue 9

第 32 卷 第 9 期



XRD patterns of Al powders mechanical milling for various time

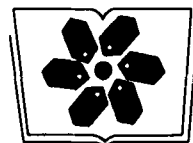


Variations in ultimate tensile strength(UTS) and elongation of the bulk Al as a function of milling duration

# 应用化学

(Yingyong Huaxue)

第 32 卷 第 9 期 2015 年 9 月



中国科学院科学出版基金资助出版

## 目 次

中文核心期刊

### · 封面图片 ·

细晶金属铝的制备及力学性能 ..... 汤华国 赵 伟 刘建伟 赵振业 马贤锋

从金属铝粉出发,通过机械球磨制粉及快速压烧结技术制备得到了高强金属铝块,抗拉强度和屈服强度分别达 537 和 495 MPa。高强铝具有小于 5  $\mu\text{m}$  的显微组织,其主要强化机制是细晶强化。

详细描述见 1070 ~ 1074 页

### · 综合评述 ·

硝基苯催化加氢合成对氨基苯酚的绿色清洁工艺 ..... 赵利军 程海洋\* 王承学\* 赵凤玉 (977)

### · 研究论文 ·

芳氨基代- $\alpha$ -呋喃葡萄糖衍生物的合成及抗肿瘤活性 .....

..... 孙宝丽 张娅玲 王丽丽 张喜全 顾红梅 李宝林\* (987)

1-二茂铁基-3-[(9-乙基)咪唑-3-基]丙烯酮的合成及三阶非线性光学性质 .....

..... 石玉芳 孙金鱼 刘成琪 赵明根\* (994)

无溶剂硼酸高效合成螺杂双环衍生物 ..... 许招会\* 刘德勇 涂缘鸿 (999)

含水杨醛席夫碱结构的黄酮衍生物的固相合成与抗氧化及抗菌活性 ..... 段志芳\* 邵 玲 (1005)

2,4-二羟基苯乙酮缩异烟酰胺的实验和 DFT 理论研究:合成、晶体结构和性质及量化计算 .....

..... 魏赞斌 王金池 江 霞 李颖茜 陈广慧 解庆范\* (1014)

聚 2,5-呋喃二甲酸乙二醇酯/聚丁二酸丁二醇酯共混物的制备与表征 .....

..... 陈 英 姜 敏 孙长江 张 强 付志鹏 徐 蕾\* 周光远\* (1022)

桥联环戊二烯金刚烷氨基二甲基钛配合物的合成及其催化丙烯聚合 .....

..... 许 波 孙延杰 杜飞瀑 蔡正国\* (1028)

钴镁铝类水滑石液相选择性催化苯甲醇氧化合成苯甲醛 .....

..... 刘 杰 周维友 吴 中 孙富安 何明阳 陈 群\* (1033)

氧化铜/氧化锌/3A 分子筛光催化剂的制备及其可见光脱氮性能 .....

..... 陈 峰 黄莹莹 颜桂炆\* 樊海梅 黄仁昆 (1040)

层级结构 BiOBr 的离子液体辅助合成及其对苯胺的可见光催化降解 .....

..... 张 军\* 李晶晶 白孝康 李华博 姚海瑞 杜西刚 (1048)

一种新的二帽 Keggin 多金属酸盐的合成、表征及磁性 ..... 张春峰 孙英华\* (1055)

|  |                      |        |
|--|----------------------|--------|
| 三偏磷酸钠交联黄原胶的制备及其溶液流变性 .....                   | 刘 茹 李海平 侯万国*         | (1061) |
| 细晶金属铝的制备及力学性能 .....                          | 汤华国 赵 伟 刘建伟 赵振业 马贤锋* | (1070) |
| 生物凝胶电镀法制备铜纳米多孔膜 .....                        | 周年云 俞宏坤*             | (1075) |
| 电沉积二氧化锰成核机理及其充放电性能 .....                     | 冯 谔 范利军 蔡 陶 李文坡*     | (1081) |
| 二氧化碳沉淀法去除苯扎贝特中主要杂质 .....                     | 吴 洁* 张海江 杨国军 吴孝超     | (1088) |
| 2-(5-溴-2 吡啶偶氮)-5-二乙氨基酚显现人体皮肤表面镀锌工具遗留印迹 ..... |                      |        |
| .....  | 邢 卓 杨瑞琴*             | (1093) |
| 通知·启事 .....                                  |                      | (1039) |

---

\* 通讯联系人.

CONTENTS

Cover Picture

Synthesis and Mechanical Performances of Bulk Ultrafine Aluminum

TANG Huaguo, ZHAO Wei, LIU Jianwei, ZHAO Zhenye, MA Xianfeng\*

Bulk Al has been prepared by mechanical milling and press-forming. The bulk Al exhibits a high tensile strength of 537 MPa and yield strength of 495 MPa. The grain refinement strengthening is considered to be the reason for such a high performance.

For details see pp1070-1074

Review

Green and Clean Technology for Preparation of *p*-Aminophenol by Catalytic Hydrogenation of Nitrobenzene

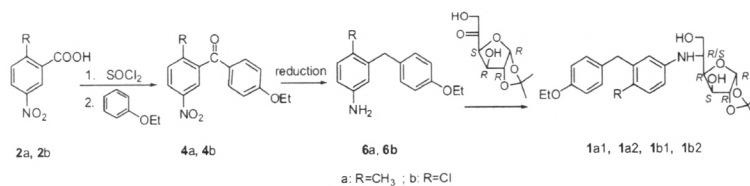
ZHAO Lijun, CHENG Haiyang\*, WANG Chengxue\*, ZHAO Fengyu

2015, 32(9):977-986

Full Papers

Synthesis and Anti-tumor Activities of Arylamino- $\alpha$ -glucofuranose Derivatives

SUN Baoli, ZHANG Yaling,  
WANG Lili, ZHANG Xiquan,  
GU Hongmei, LI Baolin\*

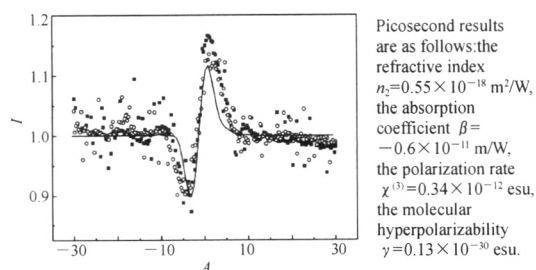


Synthesis and anti-tumor activity of four novel arylamino- $\alpha$ -glucofuranose derivatives were reported. Compound 1a1 exhibited high anti-tumor activity on A431 cell ( $IC_{50} = (6.54 \pm 1.34) \mu\text{mol/L}$ ).

2015, 32(9):987-993

Synthesis and Nonlinear Optical Properties of 1-Ferrocenyl-3-((9-ethyl)carbazole-3-yl)acrylic Keton

SHI Yufang, SUN Jinyu, LIU Chengqi, ZHAO Minggen\*

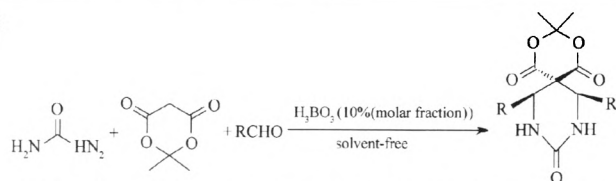


2015, 32(9):994-998

Efficient Solvent-free Synthesis of Spiro Heterobicyclic Derivatives with Boric Acid as Catalyst

XU Zhaohui\*, LIU Deyong, TU Yuanhong

2015, 32(9):999-1004

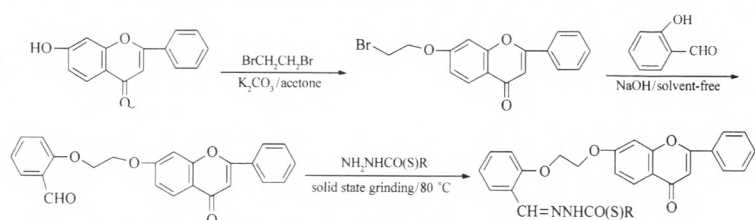


Eight spiro heterobicyclic compounds were efficiently synthesized by the three component condensation reaction of aromatic aldehydes with urea and 2,2-dimethyl-1,3-dioxane-4,6-dione with high yield.

Solid Phase Synthesis and Biological Activity of Flavone Derivatives Containing Salicylidene Schiff Bases

DUAN Zhifang\*, SHAO Ling

2015, 32(9):1005-1013

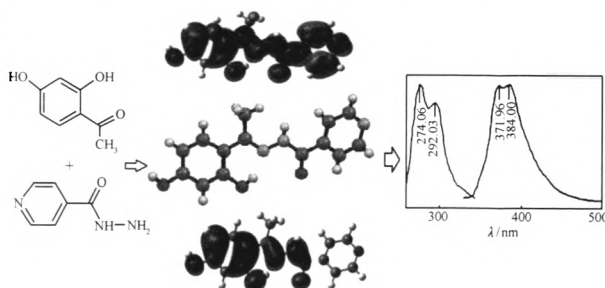


Fourteen flavone derivatives containing salicylidene Schiff bases synthesized by the solid phase condensation reaction show antioxidative effects and the antimicrobial activity.

Experimental and DFT Studies of Pyridine-4-carboxylic Acid (2,4-dihydroxy-phenylethylidene)-hydrazide Schiff Base; Synthesis, Crystal Structure, Properties and Quantum Chemistry Calculation

WEI Zanbin, WANG Jinchu, JIANG Xia, LI Yingqian, CHEN Guanghui, XIE Qingfan\*

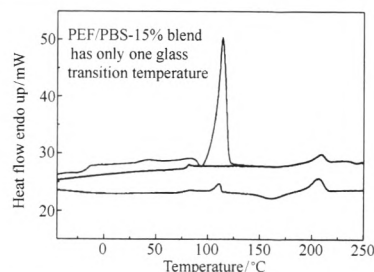
2015, 32(9):1014-1021



Preparation and Characterization of Poly(ethylene 2,5-furandicarboxylate)/Poly(butylene succinate) Blends

CHEN Ying, JIANG Min, SUN Changjiang, ZHANG Qiang, FU Zhipeng, XU Lei\*, ZHOU Guangyuan\*

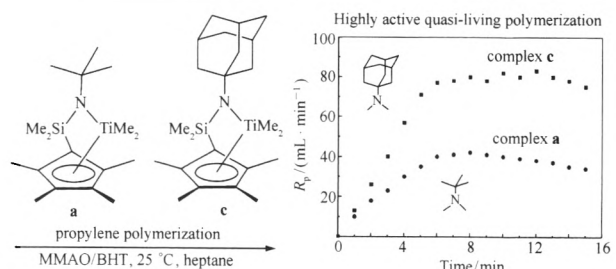
2015, 32(9):1022-1027



Synthesis of ansa-(Cyclopentadienyl) (adamantylamido)titanium Complex for Propylene Polymerization

XU Bo, SUN Yanjie, DU Feipu and CAI Zhengguo\*

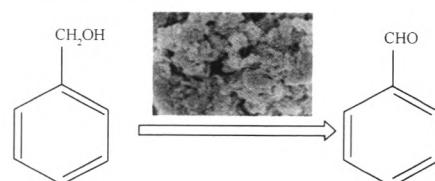
2015, 32(9):1028-1032



Selective Oxidation of Benzyl Alcohol to Benzaldehyde Catalyzed by Co<sub>2</sub>/Al/Mg<sub>x</sub> Hydrotalcite-like Materials in Liquid Phase

LIU Jie, ZHOU Weiyu, WU Zhong, SUN Fu'an, HE Mingyang, CHEN Qun\*

2015, 32(9):1033-1039

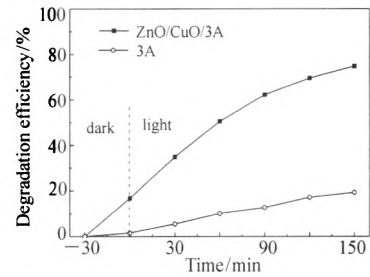


Selective oxidation of benzyl alcohol to benzaldehyde catalyzed by Co/Al/Mg hydrotalcite-like materials in liquid phase

Preparation and Visible Light Denitrification Performance of Copper Oxide/Zinc Oxide/3A Molecular Sieve Photocatalyst

CHEN Feng, HUANG Yingying, YAN Guiyang\*, FAN Haimei, HUANG Renkun

2015, 32(9):1040-1047

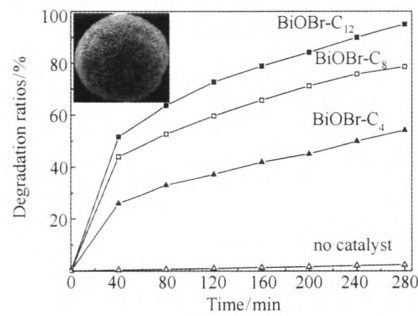


CuO/ZnO/3A composite photocatalyst was prepared by impregnation and calcined at 400 °C with 9.8% of zinc and 28.6% of copper enabled 74.78% denitrification of the simulated oil system.

Ionic Liquid Assisted Synthesis of Hierarchical BiOBr Crystals and Its Application in Visible Photocatalytic Degradation of Aniline

ZHANG Jun\*, LI Jingjing, BAI Xiaokang, LI Huabo, YAO Hairui, DU Xigang

2015, 32(9):1048-1054

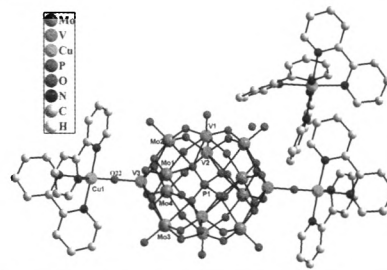


Petal-like flakes clustered BiOBr micro crystalline synthesized by using ionic liquid [C<sub>4</sub>mim]Br as bromo source and soft template reveal excellent catalytic performance for the visible photocatalytic degradation of aniline.

Hydrothermal Synthesis, Structure Characterization and Magnetism Property of a New Bi-capped Keggin Polyoxometalate

ZHANG Chunfeng, SUN Yinghua\*

2015, 32(9):1055-1060

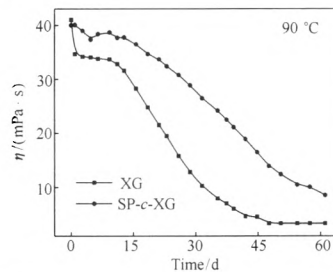


A new bi-supporting heteropolyoxometalate exhibits an extended three-dimensional supramolecular network.

Synthesis of Sodium Trimetaphosphate Crosslinked Xanthan Gum and Rheological Properties of Its Aqueous Solution

LIU Ru, LI Haiping, HOU Wanguo\*

2015, 32(9):1061-1069

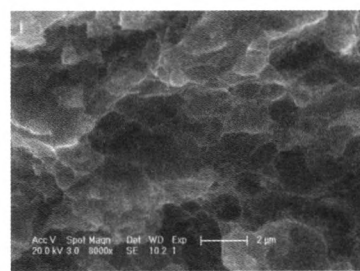


The SP-c-XG solution derived from xanthan gum(XG) crosslinked by sodium trimetaphosphate(STMP) exhibited higher elasticity and temperature resistance compared to the XG solution.

Synthesis and Mechanical Performances of Bulk Ultrafine Aluminum

TANG Huaguo, ZHAO Wei, LIU Jianwei, ZHAO Zhenye, MA Xianfeng\*

2015, 32(9):1070-1074

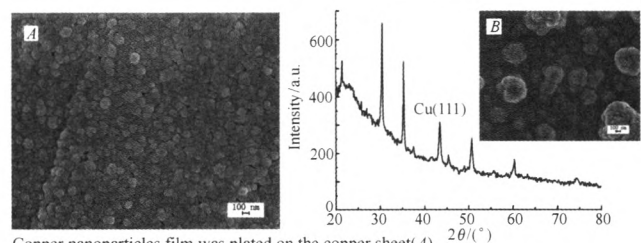


Bulk Al has been prepared by mechanical alloying and press-forming, and the high strength of pure aluminum is benefit from the fine grain size

Preparation of Nano-porous Copper Film with Bio-gel Plating

ZHOU Nianyun, YU Hongkun\*

2015, 32(9):1075-1080



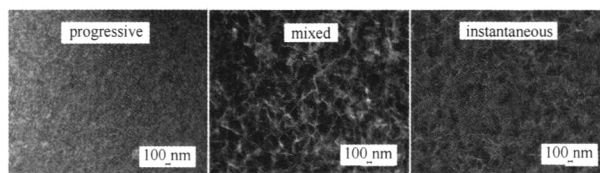
Copper nanoparticles film was plated on the copper sheet(A) and ITO(B) in the presence of chitasan and the grain size on the ITO was about 25 nm.

---

**Electrodeposition of Manganese Dioxide: The Nucleation Mechanism and Capacitance Performance**

FENG An, FAN Lijun, CAI Tao, LI Wenpo \*

2015, **32**(9) :1081-1087



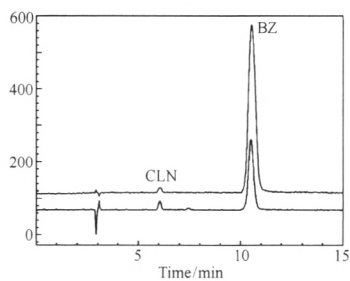
SEM of MnO<sub>2</sub> electrodes with three different electrodeposition nucleation mechanisms

---

**Removal of the Main Impurity from Benzafibrate by a Precipitation Method with Carbon Dioxide**

WU Jie \*, ZHANG Haijiang, YANG Guojun, WU Xiaochao

2015, **32**(9) :1088-1092



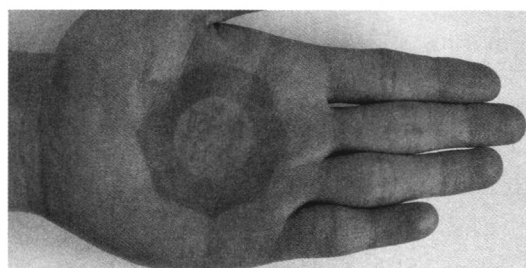
In stead of the repeated recrystallization, precipitation method with carbon dioxide was used to effectively remove the impurity of starting material form benzafibrate in the post-processing of synthesis.

---

**Chromogenic Detection of Imprints Left by Zinc Coatings on Human Skins by 2-(5-Bromo-2-pyridylazo)-5-(diethylamino) phenol**

XING Zhuo, YANG Ruiqin \*

2015, **32**(9) :1093-1098



The latent imprint lift by zinc coatings on hand skin was detected by chromogenic reagent of 5-Br-PADAP

---

\* To whom correspondence should be addressed

## 第九届《应用化学》编辑委员会名单(按拼音顺序记)

**主 编:**

张洪杰

**常务副主编:**

张柏林

**副主编:**

廖代正 邵元华 苏朝晖 王 为 王 野

**顾问委员:**

曹楚南 陈冀胜 陈小明 程镨时 董绍俊 段 雪 冯守华 冯小明 韩志超 洪茂椿 江 明  
李 灿 李正名 倪嘉缙 钱逸泰 沈之荃 苏 锵 田中群 王佛松 吴 奇 徐如人 杨秀荣  
杨玉良 张礼和 张玉奎 郑兰荪

**编委委员:**

安立佳 陈 军 陈义旺 程 鹏 董 川 房 喻 付宏刚 甘志华 高 翔 胡继明 金国新  
李星国 李悦生 林金明 刘世勇 刘正平 马小军 潘 毅 彭孝军 曲良体 曲晓刚 沈兴海  
施 展 孙世刚 谭蔚泓 唐 勇 王 博 王 成 王东升 王 静 王利祥 王 鹏 汪 信  
王彦广 武培怡 解孝林 薛冬峰 严秀平 杨 柏 杨向光 杨小牛 游劲松 张书圣 张四纯  
赵凤玉 周光远 朱俊杰 朱为宏

**外籍委员:**

Amatore C, Girault R H, Machida K, McCarthy T J

应用化学 Yingyong Huaxue

(月刊,1983年创刊)

第 32 卷 第 9 期 2015 年 9 月 10 日

Chinese Journal of Applied Chemistry

(Monthly, Established in 1983)

Volume 32 Issue 9 September 10, 2015

|                 |                             |                             |  |
|-----------------|-----------------------------|-----------------------------|--|
| <b>编 辑</b>      | 《应用化学》编辑委员会                 | <b>Edited by</b>            | The Editorial Board, Chinese Journal of Applied Chemistry                        |
|                 | 地址:长春市人民大街5625号             |                             | Add:5625 Renmin St., Changchun 130022, China                                     |
|                 | 邮政编码:130022                 |                             |  |
|                 | 电话:0431-(85262016,85262330) |                             | Tel:0431-(85262016,85262330)   |
|                 | E-mail:yyhx@ciac.ac.cn      |                             | E-mail:yyhx@ciac.ac.cn   |
|                 | 网站:http://yyhx.ciac.jl.cn   |                             | Website:http://yyhx.ciac.jl.cn   |
| <b>主 编</b>      | 张洪杰                         | <b>Editor-in-Chief</b>      | ZHANG Hongjie  |
| <b>主 管</b>      | 中国科学院                       | <b>Administered by</b>      | The Chinese Academy of Sciences(CAS)   |
| <b>主 办</b>      | 中国化学会                       | <b>Sponsored by</b>         | The Chinese Chemical Society   |
|                 | 中国科学院长春应用化学研究所              |                             | The Changchun Institute of Applied Chemistry, CAS                                |
| <b>出 版</b>      | 科学出版社                       | <b>Published by</b>         | Science Press  |
|                 | 地址:北京东黄城根北街16号              |                             | Add:16 Donghuangchenggen North Street, Beijing 100717, China                     |
|                 | 邮政编码:100717                 |                             |  |
| <b>印刷装订</b>     | 沈阳中科印刷有限责任公司                | <b>Printed by</b>           | Printing House of Shenyang Zhongke Limited Company                               |
| <b>国内发行</b>     | 辽宁省邮政公司报刊发行公司               | <b>Home Distributor</b>     | Postal and Newspapers Corporation and Periodicals Distribution Company, Liaoning |
| <b>国外发行</b>     | 中国国际图书贸易集团有限公司              | <b>Overseas Distributor</b> | China International Book Trading Corporation                                     |
|                 | 地址:中国,北京市海淀区车公庄西路35号        |                             | Add. 35 Chegongzhuang Xilu, Haidian District, Beijing 100048, China              |
|                 | 邮政编码:100048                 |                             |  |
| <b>广告经营许可证:</b> | 吉工商广字206号                   |                             |  |

国内统一刊号: CN 22-1128/06

国内邮发代号: 8-184

国外发行代号: M809

定价: 30.00 元

国内 外 公 开 发 行

ISSN 1000-0518



9 771000 051156