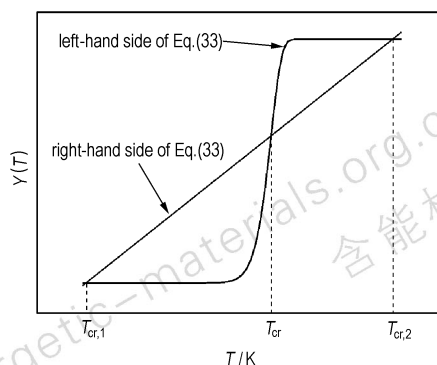


Estimation of Critical Temperatures of Hot-spot Initiation in Energetic Materials

HU Rong-zu, GAO Hong-xu, ZHAO Feng-qi, ZHANG Hai, GOU Ming, ZHAO Hong-an, WANG Xi-jun, MA Hai-xia
Chinese Journal of Energetic Materials, 2009, 17(2): 127–130



The critical temperature (T_{cr}) of hot-spot initiation in energetic materials was estimated. The values for 11 energetic materials were obtained.

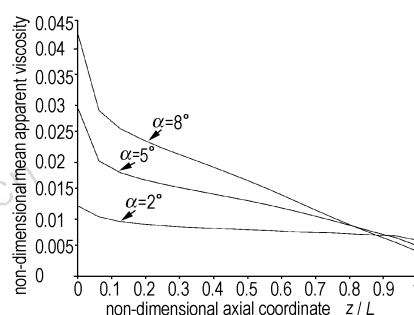
Estimation of Enthalpy of Formation for Energetic Thermoplastic Polyurethane Elastomers by Group Additivity Method

Lü Yong, LUO Yun-jun, GE Zhen
Chinese Journal of Energetic Materials, 2009, 17(2): 131–136

The enthalpies of formation for energetic thermoplastic polyurethane elastomers (ETPE) based on glycidyl azide polymer (GAP), poly glycidyl nitrate (PGN), poly bis-azidomethyl oxetane (PBAMO), poly (3-nitratomethyl-3-methyloxetane) (PNIMMO), bis-azidomethyl oxetane-azidomethyl methyl oxetane (BAMO/AMMO) copolymer as soft segments, diphenylmethane diisocyanate (MDI), toluene diisocyanate (TDI), isophorone diisocyanate (IPDI) as hard segments and butadiene (BDO) as chain extender were estimated by group additivity method.

Numerical Analysis of Factors Affecting Flow Property of Gel Propellants in Round Pipes

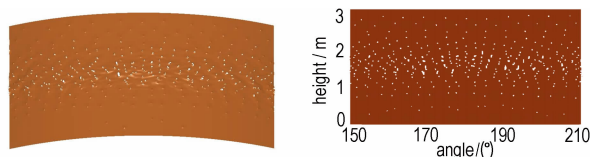
QIANG Hong-fu, XIA Xue-li
Chinese Journal of Energetic Materials, 2009, 17(2): 137–142



Factors affecting flow property of gel propellants in round pipes were numerically analyzed.

Numerical Simulation of Effect of Different Initiation Positions on a Certain Focusing Fragment Warhead

YAN Han-xin, JIANG Chun-lan, LI Ming, WANG Zai-cheng
Chinese Journal of Energetic Materials, 2009, 17(2): 143–146

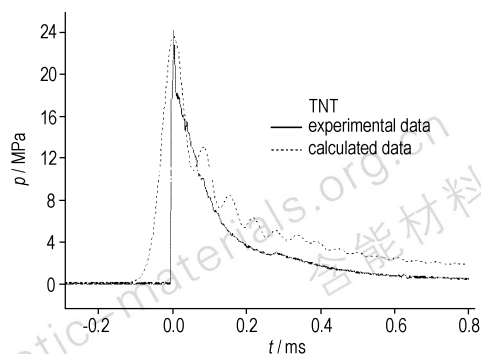


A certain focusing fragment warhead driven by two different places of detonation respectively, were numerically simulated by using DYNA3D. Target was modeled numerically at 6 m far away from the fragment warhead.

Numerical Simulation of Energy Output Structure for the Underwater Explosion

SHI Rui, XU Geng-guang, XU Jun-pei, LIU Ke-zhong

Chinese Journal of Energetic Materials, 2009, 17(2): 147–151



Lee-Taver Ignition and Growth Model and JWL EOS (Equations of State) were used to calculate far-field UNDEX of TNT and PBXW-115 with AUTODYN software. Shock wave parameters were compared with experimental data.

Simulation of Neyer D-Optimal Sensitivity Test

ZHOU Li-dong, WEN Yu-quan,

WANG Pei-lan, WANG Jun-bo

Chinese Journal of Energetic Materials, 2009, 17(2): 152–156

Sensitivity testing based on Neyer D-optimal method was introduced. The specificity and influence factor of the parametric estimation was studied by computer simulation.

Synthesis and Blending of High-density Hydrocarbon

Fuels with Density Beyond $1.0 \text{ g} \cdot \text{cm}^{-3}$

WANG Lei, ZHANG Xiang-wen, ZOU Ji-jun,

HAN Hong, WANG Li, MI Zhen-tao

Chinese Journal of Energetic Materials, 2009, 17(2): 157–160

Three high-density hydrocarbons with molecular structure of $\text{C}_{10}\text{H}_{16}$ (C10), $\text{C}_{15}\text{H}_{22}$ (C15) and $\text{C}_{20}\text{H}_{28}$ (C20) were synthesized using dicyclopentadiene as feedstocks.

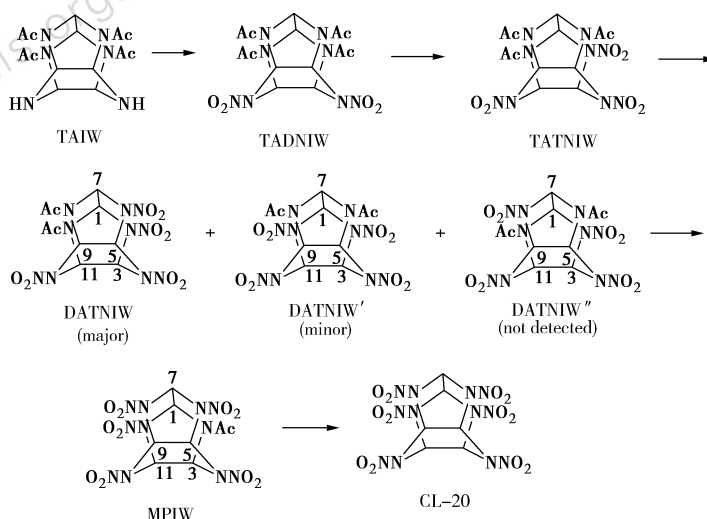
Reaction Mechanism of Preparation CL-20 from Tetraacetylhexaazaisowurtzitane Nitrated by Mixture of Nitric Acid and Sulfuric Acid

SUN Cheng-hui, FANG Tao, YANG Zong-yun,

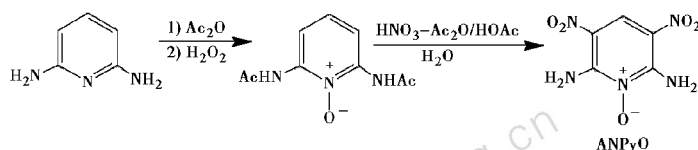
BAI Jun-hong, FENG Ze-wang, LIU Juan, LI Li,

MA Peng-chang, CHEN Lian-zhong, ZHAO Xin-qi

Chinese Journal of Energetic Materials, 2009, 17(2): 161–165



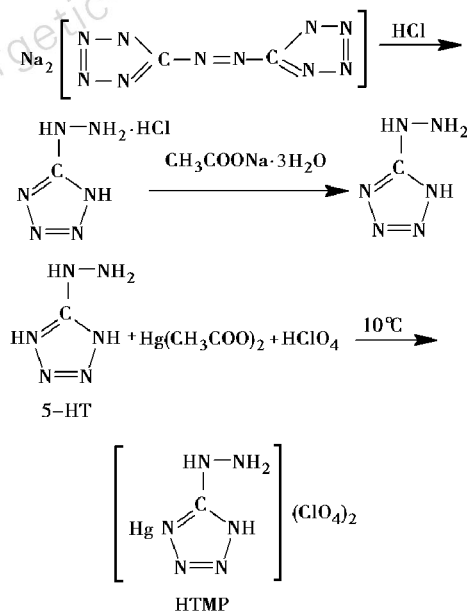
The nitration mechanism by mixture of nitric acid and sulfuric acid for preparation of tetraacetylhexaazaisowurtzitane was studied.

Synthesis of 2,6-Diamino-3,5-dinitropyridine-1-oxide

A novel synthetic method for 2,6-diamino-3,5-dinitropyridine-1-oxide (ANPyO) was explored using 2,6-diaminopyridine as the starting materials by acetylation, *N*-oxidation, nitration and hydrolysis.

CHENG Jian, YAO Qi-zheng, LIU Zu-liang

Chinese Journal of Energetic Materials, 2009, 17(2): 166 – 168

Synthesis and Properties of Laser Sensitivity Primary Explosive 5-Hydrazinotetrazole Mercury Perchlorate

5-Hydrazinotetrazole mercury perchlorate (HTMP) was synthesized from 5-hydrazinotetrazole by complex reaction with mercury acetate and perchlorate. Its structure was characterized by using Fourier transform infrared (FTIR), energy dispersive spectrum (EDS) and elemental analysis.

ZHU Ya-hong, SHENG Di-lun, YANG Bin,

CHEN Li-kui, MA Feng-e

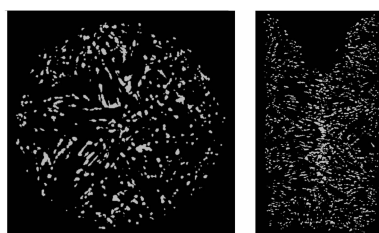
Chinese Journal of Energetic Materials, 2009, 17(2): 169 – 172

Experimental Study on Crystallization of Casting TNT Explosive During Solidification by High-resolution X-ray CT

TIAN Yong, LIU Shi, ZHANG Wei-bin,

DAI Bin, ZHOU Hong-ping, LUO Guan

Chinese Journal of Energetic Materials, 2009, 17(2): 173 – 177



The crystallization characteristic of casting molding of TNT explosive was on-line studied by high-resolution X-ray computed tomography and the three-dimensional structure information and distribution rule were obtained.

Electrical Conductivity and Reaction Zone Width Measurement of Detonation Process for Cast TNT/RDX Compositions

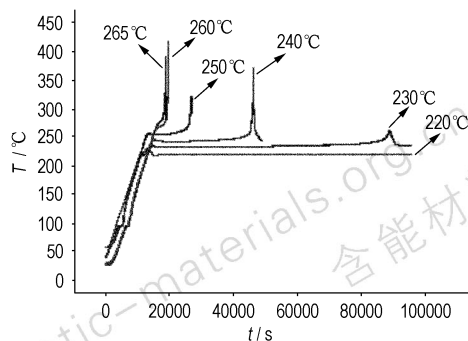
JIAO Qing-jie, JIN Zhao-xin, XU Xin-chun

Chinese Journal of Energetic Materials, 2009, 17(2): 178 – 182

The coaxial measurement of electrical conductivity was improved by using shock initiation method, and the conductivity formula was derived. The suitable shock wave pressure was input to limit the shock wave reverberation in reaction zone and instability in detonation growth.

Cook-off Test of DNAN Explosive

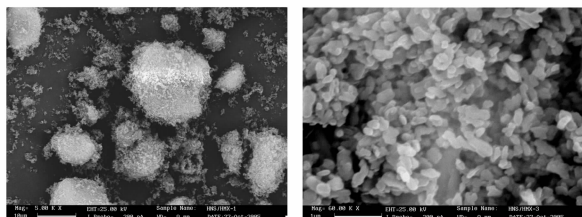
WANG Hong-xing, WANG Xiao-feng,
LUO Yi-ming, JIANG Fang-fang
Chinese Journal of Energetic Materials, 2009, 17(2): 183 – 186



The thermal safety of 2,4-dinitroanisole (DNAN) explosive was studied by cook-off test from 220 °C to 265 °C. DNAN was compared with TNT on thermal safety.

Preparation and Performance of HNS/HMX Superfine Mischcrystal

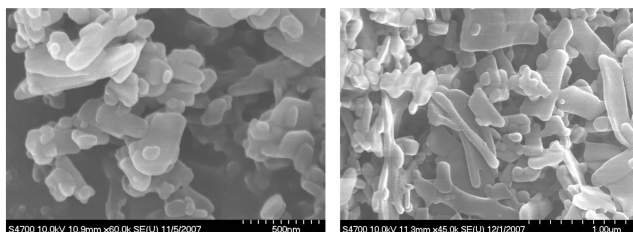
WANG Ping, LIU Yong-gang,
ZHANG Juan, YU Wei-fei, XIA Yun-xia
Chinese Journal of Energetic Materials, 2009, 17(2): 187 – 189



HNS/HMX mischcrystals was prepared by using solvent/nonsolvent recrystallization method. Structure characterization and performance were studied in detail.

Study on Morphology Control of Submicron HNS Explosive

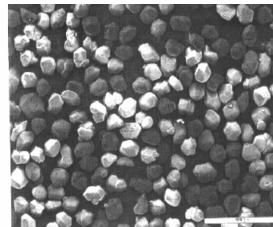
WANG Jing-yu, HUANG Hao, DONG Jun,
LIANG Lei, ZHANG Yu-ruo, HUA Jun
Chinese Journal of Energetic Materials, 2009, 17(2): 190 – 193



Submicron (nano)-HNS with different morphologies was prepared by prefiling twin-fluid nozzle assisted by solvent-nonsolvent crystallization process.

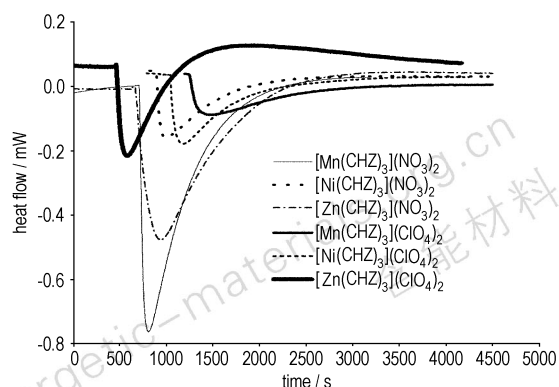
Manufacturing Process for the Spherical RDX with Particle Size from 150 μm to 180 μm

JING Chang-lun, XU Fu-ming, JIA Hong-xuan, HOU Yong
Chinese Journal of Energetic Materials, 2009, 17(2): 194 – 197



The spherical RDX with particle size from 150 μm to 180 μm was prepared. The recrystallization process of RDX from concentrated nitric acid was studied.

Relationship between Lattice Energy and Sensitivity of
 $[M(CHZ)_3](NO_3)_2$ and $[M(CHZ)_3](ClO_4)_2$
 ($M = Mn, Zn, Ni$)

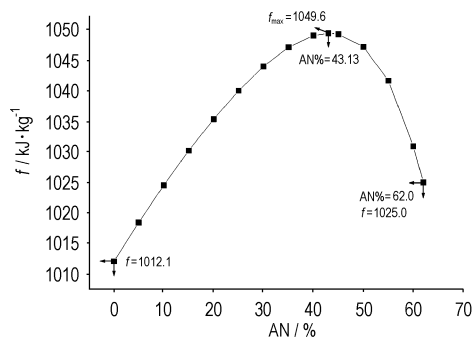


ZHENG Qiu-yu, QIAO Xiao-jing, SHAO Feng-lei,
 ZHANG Jian-guo, YANG Li

Chinese Journal of Energetic Materials, 2009, 17(2): 198–201

The dissolution behaviors of $[M(CHZ)_3](NO_3)_2$ and $[M(CHZ)_3](ClO_4)_2$ ($M = Mn, Zn, Ni$) and their standard molar enthalpies of dissolution in deionized water were measured by a Setaram C80II microcalorimeter at 298.15 K.

Effects of Ammonium Nitrate on Energy Performance of Gun
Propellant

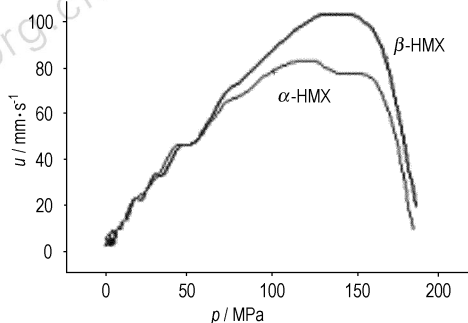


HE Zeng-di, LIU You-ping, HE Li-ming, XIAO Zhong-liang

Chinese Journal of Energetic Materials, 2009, 17(2): 202–205

The effects of ammonium nitrate on energy of gun propellant were studied. The energy parameters of the gun propellant were calculated. The specific energy, covolume and explosion heat of the gun propellant were tested.

Performance of Nitramine Propellants with Different
Phases of HMX

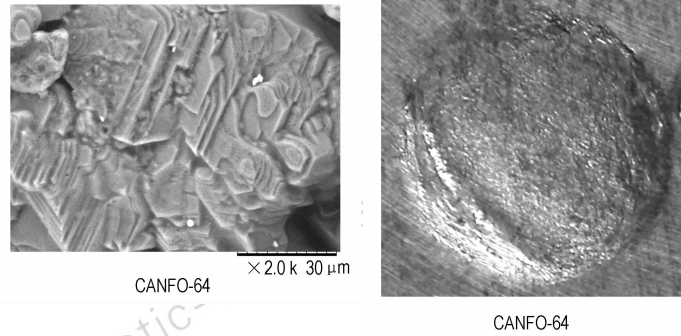


WU Yan-guang, WU Xiao-qing, CHEN Hong-wei,
 ZHANG Lei, ZHANG Chuang

Chinese Journal of Energetic Materials, 2009, 17(2): 206–209

The combustion performance and mechanical properties of nitramine propellant which contains two different crystals of α -HMX and β -HMX were tested by closed combustion bomb and mechanical properties tester.

Effect of Surfactants on Particles Microstructure and Detonator Initiation Sensitivity of ANFO



ZENG Gui-yu, GAO Da-yuan, Lü Chun-xu

Chinese Journal of Energetic Materials, 2009, 17(2): 210–213

The ammonium nitrate and fuel oil (ANFO) were modified by six kinds of surfactants. The particle microstructures were observed by SEM and detonator initiation sensitivity of ANFO were measured.

Experimental Study on the Storage Properties and Its Influence Factors of the Emulsion Explosive after Pressed by Shockwave

WANG Yin-jun, WANG Xu-guang, LI Jin-jun

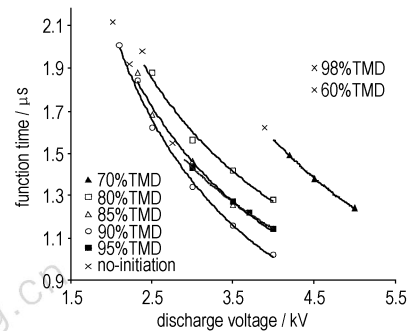
Chinese Journal of Energetic Materials, 2009, 17(2): 214–217

The explosion shockwave of emulsion explosives after pressed by shockwave in water was tested and their storage properties were studied with its explosion shockwave crest values.

Effect of Charge Parameters on the Performance of Exploding Foil Initiator

TONG Hong-hai, CHU En-yi, REN Xi, QIAN Yong

Chinese Journal of Energetic Materials, 2009, 17(2): 218–221



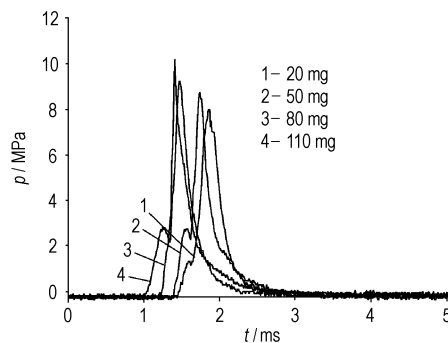
The function times of exploding foil initiator (EFI) with different charge parameters were measured at different discharge voltages.

Study on Ignition Performance of Short Impulsive Thruster

JIANG Xin-guang, LI Guo-xin,

WANG Zhi-xin, LAO Yun-liang

Chinese Journal of Energetic Materials, 2009, 17(2): 222–224



The ignition performances of short impulsive thruster on different ignition composition amount condition were analyzed through the $p-t$ curves.

Design on Mild Multi-point Synchronous Explosive Circuit

BAI Ying-wei, ZHANG Rui, LI Zhe,

ZHOU Xiao-bin, WANG Ke-xuan, CHU En-yi

Chinese Journal of Energetic Materials, 2009, 17(2): 225–228



Two kinds of explosive circuit samples that based on silver code were produced. They were one in nine out eccentric explosive circuit and one in twelve out center explosive circuit. The charge of the column and the code were HMX C III.

Effect of Dopant on BNCP Semiconductor Laser Sensitivity

CHEN Li-kui, SHENG Di-lun, YANG Bing,

ZHU Ya-hong, WANG Yan-lan

Chinese Journal of Energetic Materials, 2009, 17(2): 229–232

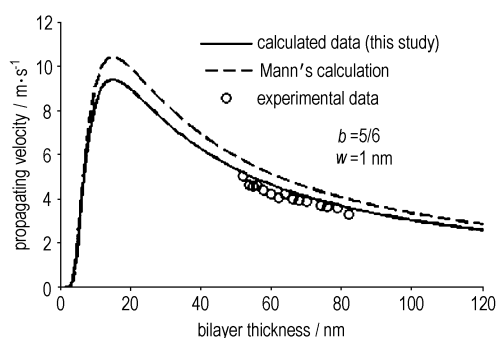
The ignition sensitivity of BNCP doped with different dyestuffs were investigated in 635 nm wavelength. And a best point of dopant C content in BNCP was found in 915 nm wavelength.

Modeling the Propagating Velocity of Reaction Waves in Al/Ni Multilayer Films

WANG Liang, HE Bi, JIANG Xiao-hua,

FU Qiu-bo, WANG Li-ling

Chinese Journal of Energetic Materials, 2009, 17(2): 233–235



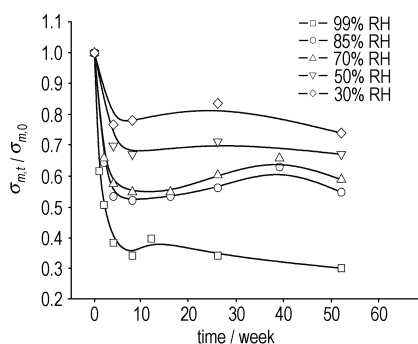
An extended model was presented to evaluate the propagating velocity of any binary multilayer systems. The calculated propagating velocities of combustion waves in Al/Ni multilayers are in better agreement with the experimental data than that of the earlier model.

Humidity Aging Behaviors of NEPE Propellant

CHI Xu-hui, PENG Song, PANG Ai-min,

ZHANG Shi-ping, WU Feng-jun

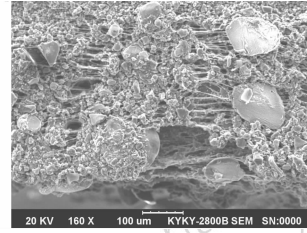
Chinese Journal of Energetic Materials, 2009, 17(2): 236–240



Humidity aging experiments were implemented to investigate effect of environment humidity on PEG-based NEPE propellant. Mechanical properties, humidity absorption ratio, and percentage of stabilizers were measured during aging time.

Experimental Study on Tensile Damage Process of NEPE Propellant

LI Jing-ming, ZHENG Xue, LI Wei, ZHAO Xiao-bin
Chinese Journal of Energetic Materials, 2009, 17(2): 241–243



The micro-structure of NEPE sample was in situ observed by SEM, and the stress distribution in grain-binder unit was also analyzed by finite element method.

Research Development on Cryogenic Solid Propulsion Technology

LI Wen-bin, PANG Ai-min, XIAO Jin-wu,
ZHANG Wen-gang, ZHANG Yun-gang
Chinese Journal of Energetic Materials, 2009, 17(2): 244–248

The research development of cryogenic solid propulsion (CSP) at home and abroad on performance, composition, grain forms and principle motor fire test was reviewed.

Adsorption of TNT using Beaded Molecularly-imprinted Polymer

ZHANG Qiu-yue, MOU Jing-hai, MENG Zi-hui,
HUANG Ying, WANG An
Chinese Journal of Energetic Materials, 2009, 17(2): 249–250

Beaded molecularly-imprinted polymers (MIPs) were synthesized by using suspension polymerization methods.

Executive editor: WANG Yan-xiu; Computer typesetter: LI Shao-hui



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本刊自 2009 年 1 月起正式开通远程稿件处理系统,欢迎大家登陆本刊网站(www.energetic-materials.org.cn)进行在线投稿,今后本刊将不再接受纸版打印稿和 E-mail 电子版投稿。对于 2008 年尚未发表的稿件本刊将继续采用电子邮件的方式与作者联系。

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