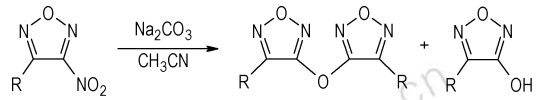
Review on Energetic Compounds Based on Furoxanyl Ether

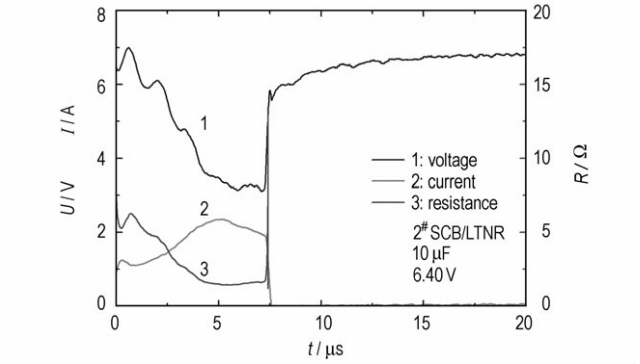


The synthetic methods of energetic compounds based on furoxan ether were reviewed, and some representive energetic compounds were introduced in detail. In addition, 11 novel compounds based on furoxan ether were designed and calculated.

WANG Bo-zhou, LI Hui, LI Ya-nan, LIAN Peng, ZHOU Yan-shui, WANG Xi-jie

Chinese Journal of Energetic Materials,2012,20(4): 385 -390

Ignition Properties of Energetic Material by Semiconductor Bridge

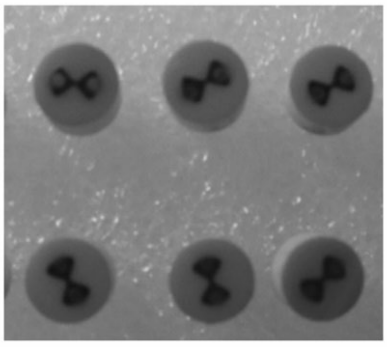


The electrical characteristics of SCB device were recorded when an ignition voltage was applied by a fast oscilloscope. The SCB firing mechanism was obtained by the analysis of resistance variation under different voltage inputs.

YANG Gui-li, ZHU Shun-guan, SHEN Rui-qi

Chinese Journal of Energetic Materials,2012,20(4): 391 -396

An Assembly of Exploding Foil and Flyer

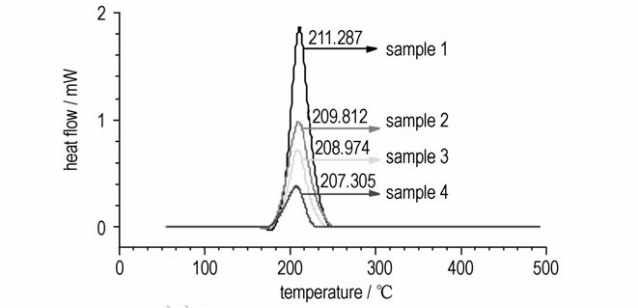


A type of assembly of exploding foil and flyer, integrated polyimide complex flyer on exploding foil of slapper squib, can make the minitype slapper squib with full metallic shell satisfy the demand of 5000V/1min, and can improve the reliability and the shelf life of the slapper squib.

ZHU Ming-shui, JIANG Xiao-hua, ZHI Yong-fa, JIANG Ming, LI Rong

Chinese Journal of Energetic Materials,2012,20(4): 397 -399

Reactive Performances of Porous Silicon/Pb_3O_4 Stabilized by Silane Coupling Agents

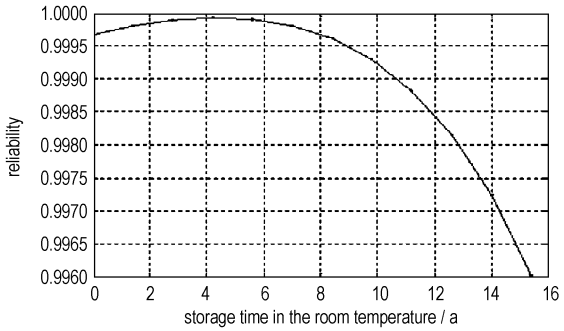


The reactivity of the 10/90- porous silicon/Pb_3O_4 ignition composition modified by silane coupling agents KH550, KH560 and KH570 was measured and studied by oxygen bomb, DSC, TG and mass spectrometry.

WANG Shou-xu, SHEN Rui-qi, YE Ying-hua, HU Yan

Chinese Journal of Energetic Materials, **2012, 20(4): 400 −405**

Evaluation on Storage Reliability of Pyrotechnics Based on Performance Degradation Data

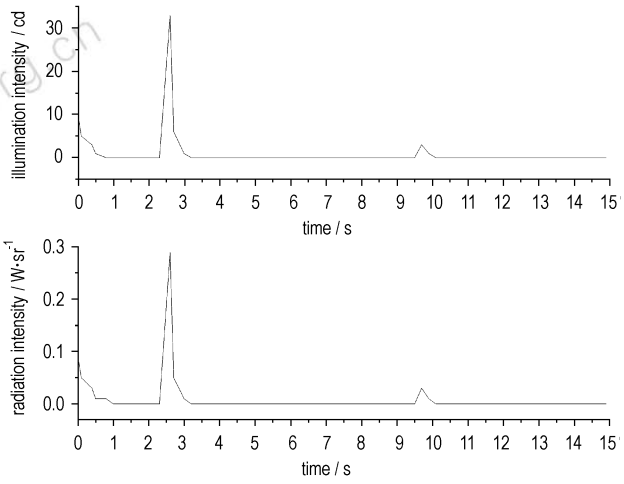


A method of evaluating the storage reliability of pyrotechnics based on performance degradation data of accelerated age testing was presented.

ZHAO Wan, YANG Jing

Chinese Journal of Energetic Materials, **2012, 20(4): 406 −408**

Co-precipitation Preparation of Silicon Delay Composition and its Properties

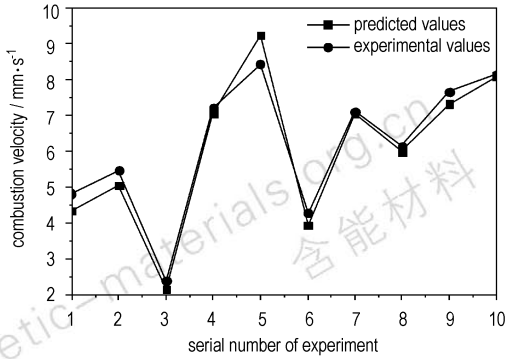


The Si/ Pb_3O_4/ $BaSO_4$ delay composition was prepared by co-precipitation method to improve the delay precision. The delay time and burning rate of the delay compositions were measured by photoelectric test system.

REN Qing-guo, QIAO Xiao-jing, LI Wang-chang, PENG Chen-guang

Chinese Journal of Energetic Materials, **2012, 20(4): 409 −413**

Combustion Characteristics Forecast of Mg/PTFE Pyrotechnic Composition with Support Vector Machine

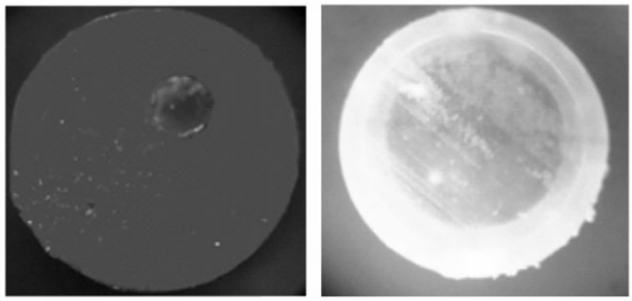


FAN Lei, PAN Gong-pei, OUYANG De-hua, Lü Hui-ping, PANG Gao-feng

Chinese Journal of Energetic Materials,2012,20(4): 414 -417

The combustion characteristics of Mg/polytetrafluorethylene (PTFE) were studied with support vector machine (SVM) method. The predicted and measured values of the combustion velocity were presented.

Mechanism of Hole Formation with Air and Solvent Vapor in Micro-pores Oblate Spherical Powder

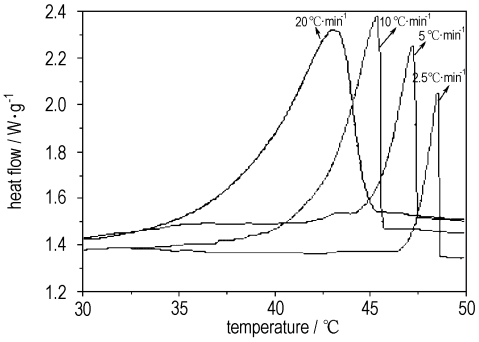


GUO Chang-ping, LIN Xiang-yang, YUAN Chao, PAN Ren-ming

Chinese Journal of Energetic Materials,2012,20(4): 418 -422

By means of eliminating or weakening the factor of hole formation by water, standing for removing the air bubbles and quick heating respectively, the mechanisms of hole formation by air and solvent vapor were checked.

Non-isothermal Crystallization Kinetics of DNAN in RDX

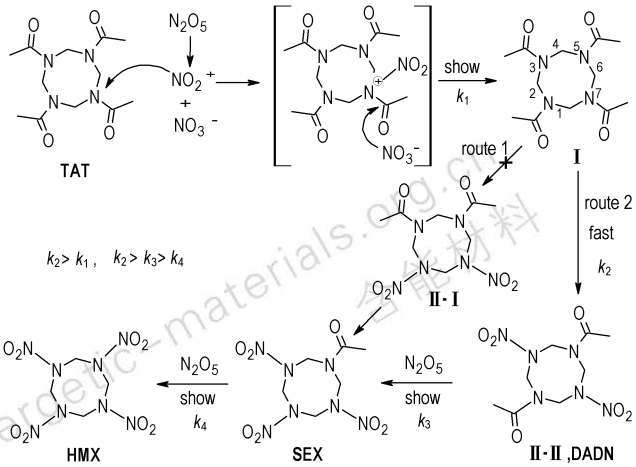


WANG Hong-xing, JIANG Fang-fang, WANG Hao, LUO Yi-ming, GAO Jie

Chinese Journal of Energetic Materials,2012,20(4): 423 -426

The non-isothermal crystallization of 2,4-dinitroanisole (DNAN) in RDX was studies by differential scanning calorimetry. Several kinetics models were used to investigate the crystallization behavior of DNAN.

Nitrolysis Mechanism of 1,3,5,7-Tetraacetyl-1,3,5,7-tetrazacyclooctane

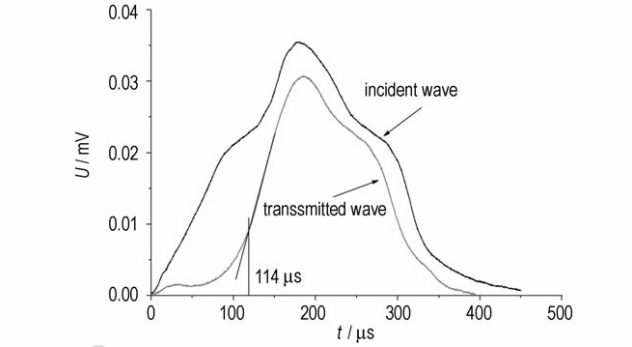


Two byproducts 1,5-diacetyl-3,7-dinitro-1,3,5,7-tetrazacyclooctane (DADN) and 1-acetyl-3,5,7-trinitro-1,3,5,7-tetrazacyclooctane (SEX) were obtained from the nitrolysis mixture of TAT in N_2O_5/HNO_3 system to prepare HMX. The results indicate that TAT is nitrolyzed in succession to form HMX, and the order of the reaction rate is $k_2 > k_1$, $k_2 > k_3 > k_4$.

HE Zhi-yong, LUO Jun, Lü Chun-xu, WANG Ping, XU rong, LI Jin-shan

Chinese Journal of Energetic Materials, **2012, 20(4): 427 −431**

Anti-overload Capability and Mechanical Failure Model of Three Primary Explosives by SHPB

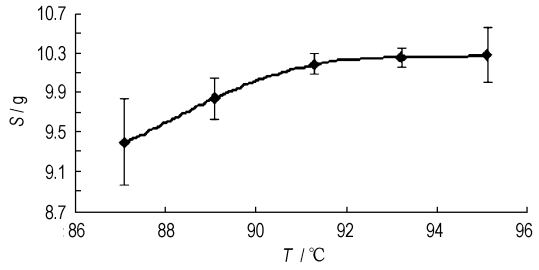


Mechanical model of primary explosive charge suffered three steps under SHPB loading. Firstly, internal force of charge increased with incident stress wave, and the mechanical response indicated its elasticity. Then, the charge would be compressed to cracking and made across section increasing, but internal force kept invariable. Finally, primary explosive charge took place brittle fracture, and it has explosion probability.

LI Zhao-xin, SHENG Di-lun, ZHU Ya-hong, YANG Bin, CHEN Li-kui, PU Yan-li, LI Jun

Chinese Journal of Energetic Materials, **2012, 20(4): 432 −436**

Solubility of RDX in Melting DNAN/MNA

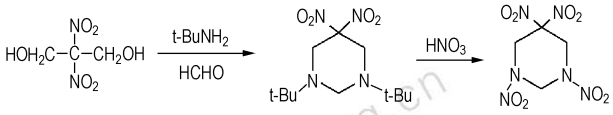


The solubility of RDX in DNAN/MNA as a function of temperature was evaluated based on the method of high performance liquid chromatography.

LUO Guan, HUANG Hui, ZHANG Shuai, WANG Ping-sheng, CAI Zhong-zhan, ZHANG Yong

Chinese Journal of Energetic Materials, **2012, 20(4): 437 −440**

Synthesis of 1, 3, 5, 5-Tetranitrohexahydropyrimidine with High Yield

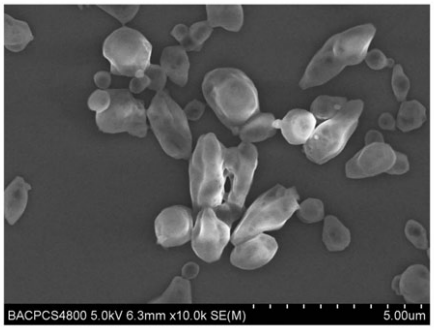


ZHANG Li-jie, JI Yue-ping, CHEN Bin, DING Feng, LI Da-peng, LIU Wei-xiao

Chinese Journal of Energetic Materials, 2012, 20(4): 441 −444

1,3,5,5-Tetranitrohexahydropyrimidine (DNNC) was prepared via Mannich and nitration reaction, and the structure was characterized by means of IR, ^{1}H NMR, ^{13}C NMR, MS spectra and elemental analyses.

Preparation of Ultrafine CL-20 by Supercritical CO_2 Anti-solvent Method

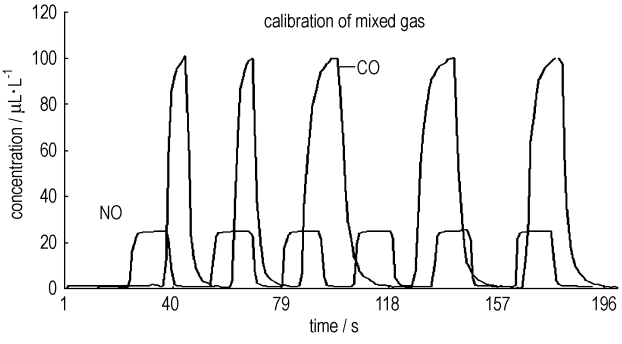


ZHU Kang, LI Guo-ping, LUO Yun-jun

Chinese Journal of Energetic Materials, 2012, 20(4): 445 −449

The Supercritical CO_2 anti-solvent method (SAS) was used to obtain ultrafine CL-20 using Ethyl acetate as solvent and PEG-200 as surfactant. At 50 ℃, 12 MPa and Mass percent concentration of 5%, ultrafine CL-20 was prepared. Result shows the surface of particles is smooth and the average particle size is 1.33 μm. There is little change in particle size distribution.

Dynamic Calibration Technology of Multicomponent Gas of Propellants and Explosives

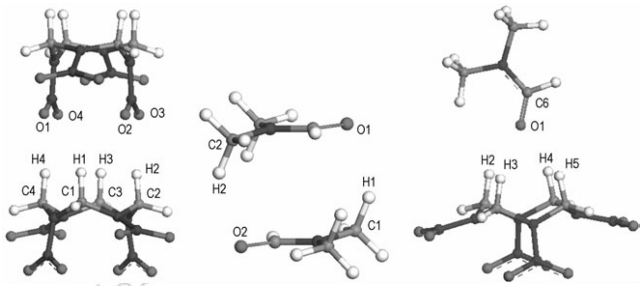


HU Lan, ZHANG Ting, YAN Rui, GAO Lang-hua, WANG Jing-na

Chinese Journal of Energetic Materials, 2012, 20(4): 450 −453

Dynamic calibration method as prediction-calibration-approximation was used for calibration of Gas of Propellants and Explosives. The relative standard deviation was less than 0.3%.

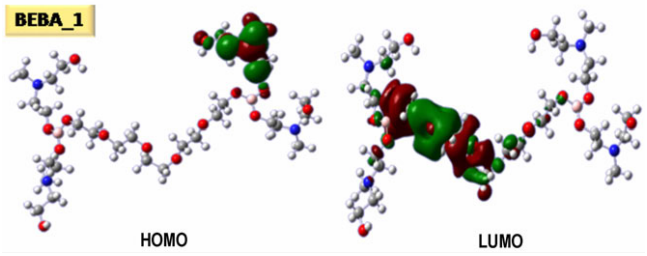
Theoretical Investigation on Structure and Intermolecular Interaction for HMX/DMF Solvate



The structures and intermolecular interactions for solvate HMX/DMF were ivestigated. The valuable information were given for understanding why co-crystallization occurs other than re-crystallization in DMF solution of β-HMX, and why all HMX molecules present α-form in the polymorphic forms of HMX/DMF solvate.

DUAN Xiao-hui, YU Hai-li, CHEN Jie, LI Hong-zhen
Chinese Journal of Energetic Materials, **2012**, **20**(**4**): **454 -458**

Theoretical Investigation of the Structures of Borate Esters and Their Bonding Interaction with RDX



CUI Rui-xi, ZHANG Wei
Chinese Journal of Energetic Materials, **2012**, **20**(**4**): **459 -464**

Innovative Metallized Formulations for Solid Rocket Propulsion

Several metallized solid rocket propellants, AP/Metal/HTPB in the ratio 68/18/14, were experimentally analyzed. Effects of the metals (micrometric and nanometric Al, B, Mg, and a variety of dual metals) on the performance of the propellant were studied.

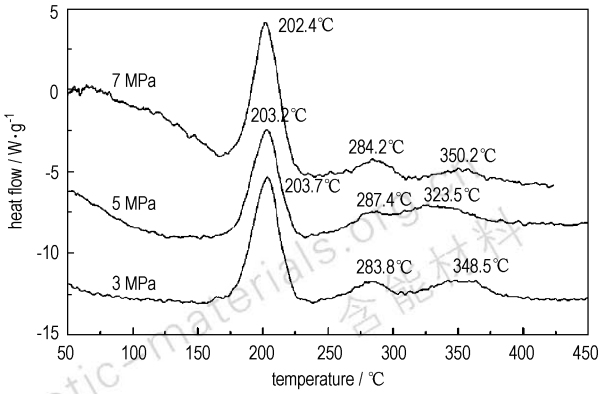
Luigi T DeLUCA, Luciano GALFETTI, Filippo MAGGI, Giovanni COLOMBO, Alice REINA, Stefano DOSSI, Daniele CONSONNI, Melissa BRAMBILLA
Chinese Journal of Energetic Materials, **2012**, **20**(**4**): **465 -474**

Effects of Fules on Primary Combustion of Boron Based Fuel-rich Propellant

The explosion heat (Q_v), the combustion temperature (T_f) and the combustion gas generation rate (η) of boron based fuel-rich propellant contained different metal were tested to research the effect of the metal to the combustion of the boron based fuel-rich propellant by the comparison of the tested parameters.

LIU Lin-lin, HE Guo-qiang, WANG Ying-hong
Chinese Journal of Energetic Materials, **2012**, **20**(**4**): **475 -478**

Experimental Study on Some Energetic Nitro-compound in DB Propellant with Low Burning Rate and Low Flame Temperature



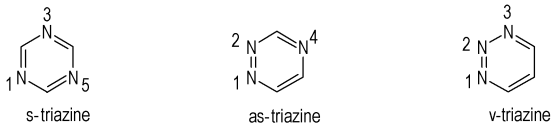
QIN Neng, PEI Jiang-feng, WANG Ming-xing
Chinese Journal of Energetic Materials,2012,20(4): 479 -484

Review on Energetic Guanidine Ionic Compounds

GAN Zhi-yong, CHAI Chun-peng, LUO Yun-jun, LI Na, LI Guo-ping
Chinese Journal of Energetic Materials,2012,20(4): 485 -490

Recent progress in synthesis and applications of energetic guanidine ionic compounds was introduced and reviewed with 30 references.

Review on Triazines Energetic Compounds

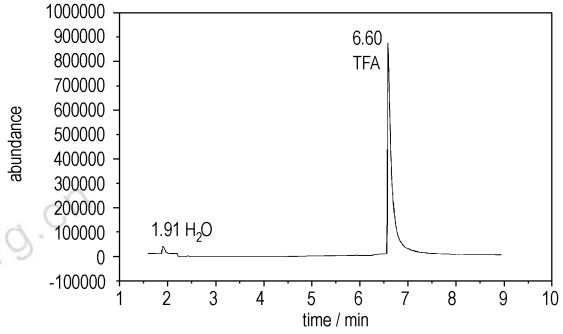


1 2 3

ZHANG Xue-jiao, LI Yu-chuan, LIU Wei, YANG Yu-zhang, PENG Lei, PANG Si-ping
Chinese Journal of Energetic Materials,2012,20(4): 491 -500

The progesses in the synthesis, energetic properties and development of the triazines′ energetic materials were reviewed with 48 references.

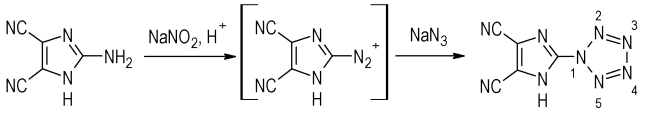
A New Recycling Technique of Trifluoroacetic Acid in Synthesis of LLM-105 Explosive



ZHOU Xiao-qing, CHENG Bi-bo, HUANG Jing-lun, ZHANG Li-yuan, LU Huan-chang, LIAO Long-yu
Chinese Journal of Energetic Materials,2012,20(4): 501

A new recycling technique of trifluoroacetic acid in the synthesis of LLM-105 explosive was obtained, and the recovered TFA was used in the synthesis of LLM-105 with good yield and purity.

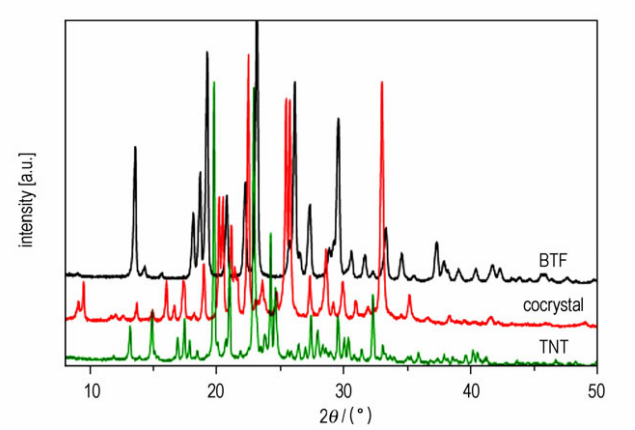
Synthesis and ^{15}N NMR Characterization of 4,5-Dicyanoimidazol-2-yl-pentazole



BI Fu-qiang, GE Zhong-xue, XU Cheng, WANG Min-chang, FAN Xue-zhong, LI Tao-qi, XU Min , LI Ji-zhen
Chinese Journal of Energetic Materials,2012,20(4): 502

4, 5-Dicyanoimidazol-2-yl-pentazole is a novel energetic pentazole compound, and its synthesis was achieved using 2-amino-4,5-dicyanoimidazole as starting material. The structural proof for the pentazole ring system by ^{15}N-NMR spectroscopy of ^{15}N labeled samples was presented. Meanwhile, the decomposition of the title compound was confirmed.

Preparation and Characterization of BTF Cocrystals



7 new cocrystals of BTF with other insensitive explosives were prepared and characterized, some of which have better safety performance than BTF but almost equal energy. It is proved that cocrystal engineering is a better way to improve the safety performance of sensitive high explosive without obviously decreasing the energy.

GUO Chang-yan, ZHANG Hao-bin, WANG Xiao-chuan,
LIU Xiao-feng, LIU Yu, SUN Jie

***Chinese Journal of Energetic Materials*,2012,20(4): 503 –504**

Executive editor: WANG Yan-xiu JIANG Mei; Computer typesetter: ZHANG Gui-hong