

1987年
国家自然科学奖获奖项目
简介

国家自然科学奖励委员会办公室 编

1988·北京

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冶金工业出版社

1987年国家自然科学奖获奖项目简介

国家自然科学基金奖励委员会办公室 编

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前 言

为鼓励科学工作者在发展我国科学事业和促进社会主义现代化建设中的积极性和创造性,1979年国务院制定了《中华人民共和国自然科学奖励条例》,决定对在阐明自然现象、特性或规律方面,对科学技术的发展有重大意义的科研成果,授予国家自然科学奖。

这项奖励的前身为国务院在1955年通过设立的面向全国的中国科学院科学奖金,1956年评出34个项目,成为我国第一次国家自然科学奖。1980—1982年在国家科委领导下,组成第一届自然科学奖励委员会,评选出125项获奖成果。1987年国家科委决定再次开展国家自然科学奖的评选,聘请武衡同志为主任,由47名著名科学家组成第二届国家自然科学奖励委员会。并决定国家自然科学奖的日常工作由国家自然科学基金委员会负责。

截至1987年7月底,中央各部委、中国科学院及各省、市、自治区和中国人民解放军系统经过初评后共提出777项研究成果申报国家自然科学奖。国家自然科学基金委员会依靠自然科学基金专家评审系统,组织近千名科学家,按照奖励标准,从科研成果的科学性、创新性、先进性和系统性等,对全部申报项目进行了认真复审,向国家自然科学奖励委员会推荐了建议奖励项目。国家自然科学奖励委员会全体会议对全部复审建议奖励项目又进行了认真评审和无记名投票表决,并将评审结果登报征求意见和处理异议,最后评定出178项优秀科研成果,建议授予国家自然科学奖。1988年8月国家科委核准了全部获奖项目。

1987年国家自然科学奖项目,按奖励等级分:一等11项(占6.2%),二等39项(占21.9%),三等87项(占48.9%),四等41项(占23.0%)。从学科类别分布看,数学15项,天文学2项,物理学22项,化学26项,生物学25项,农学3项,医学8项,地球科学31项,材料科学12项,信息科学16项,工程科学18项。获奖项目的主要研究者共936名,其中具有高级职称的科学家684名,包括中国科学院学部委员69名。获奖者的年龄以46—55岁为主,共456名,约占获奖者的一半,35岁以下获奖者56名(占6.3%)。女科学家140名(占15%)。少数民族科学家28名(占3%)。获奖情况表明,中国科学院和高等院校的科学工作者是我国基础研究和应用基础研究的中坚力量,共获奖154项(占86.5%)。同时表明,近年来各地方和部门所属科研单位的研究水平也有明显提高,具有各自特色。

国家自然科学奖获奖项目,都是世界科学发展前沿性的工作,是科学家们十余年,甚至几十年艰辛劳动的结晶,具有较高的学术水平或较强的应用前景。这些优秀的研究成果,对中国科学事业的发展和社会建设做出了重要贡献,也是全人类的共同财富。

为使社会各界,特别是广大科技工作者和科技管理干部,对1987年国家自然科学奖获奖项目情况有所了解,在国家自然科学奖励委员会秘书长师昌绪先生指导下,我们编辑了这本《简介》,其内容包括:获奖项目的研究内容,主要论著介绍,获奖项目英文目录,获奖项目在不同学科和部门的分布情况统计,第二届国家自然科学奖励委员会委员名单。其中,各项目的简介由各获奖项目的主要研究者提供,我们在编辑过程中根据评审意见和编辑要求做了一些修改。在编辑《简介》过程中得到国家自然科学基金委员会各科学部的帮助,在此表示感谢。限于时间仓促,经验不足,有不妥之处,请批评指正。

国家自然科学奖励委员会办公室

1988年12月

第二届全国自然科学奖励委员会

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* 委员任职是第二届国家自然科学奖励委员会成立时（1987年6月）的职务

Projects Awarded the 1987 National Natural Science Prizes

FIRST CLASS

1. A Comprehensive Study of the Uplift of Qinghai-Xizang Plateau and Its Impact on the Natural Environment and Human Activities (1)

Lu Dongsheng, Shu Yafeng, Sun Honglie, Zheng Du, Chang Chengta, Wu Zhengvi, Yu Jixiang, Wen Shixuan, Li Jiqin, Zhang Jingwei, Li Wenhua, Tong Wei, Gao Yixin, Cheng Hong, Yang Yichou, Huang Fusheng, Wen Jingchun, Feng Zuojun, Zhou Yuesheng, Huang Wenxian, Gao Dengyi, Chen Chuanyou, Han Yufeng, Li Bingyuan, Zhang Mingtao, Wu Sagong, Wang Jintong, Ni Zubin, Guan Zhihua, Zhang Rongzu, Tong Jiwen, Zheng Xiyu, Lu Jimei, Deng Wanning, Zhang Yiguang, Xie Zichu, Ning Auchen, Wang Liancheng, Shao Qiquan

(The Commission for Integrated Surveys of Natural Resources, Academia Sinica; The Institute of Geography, Academia Sinica; The Institute of Geology, Academia Sinica; The Institute of Botany, Academia Sinica; Lanzhou Institute of Glaciology and Cryopedology, Academia Sinica; Peking University etc.)

2. A Study on the Stability of Differentiable Dynamical Systems (3)

Liao Shantao

(Peking University)

3. The General Atmospheric Circulation over Eastern Asia (5)

Ye Duzheng, Tao Shiyun, Zhu Baozhen, Chen Longxun

(The Institute of Atmospheric Physics, Academia Sinica)

4. Graph Theoretical Molecular Orbitals and Their Application (7)

Liang Aoping, Jiang Yuansheng

(Jilin University)

5. Total Synthesis of Yeast Alanine Transfer Ribonucleic Acid (9)

Wang Dehao, Wang Enbi, Wang You, Zheng Keqin, Zhu Yingshu, Chen Haibao, Chen Shen, Qiu Musui, Liang Zhenhe, Shen Qingxiang, Yang Zaiwan, Hu Meihao, Wang Guohai, Wu Rentong, Yu Yunhua, Lu Yunhua, Chen Changqing

(Shanghai Institute of Biochemistry, Academia Sinica; Shanghai Institute of Cell Biology, Academia Sinica; Shanghai Institute of Organic Chemistry, Academia Sinica; The Institute of Biophysics, Academia Sinica; Peking University etc.)

6. Quantity Relations Between Modification of Functional Groups of Proteins and Their Biological Activity (11)

Zou Chenglu, Xu Genjun, Sun Yukun, Du Yucang, Zhao Kangyuan, Zhou Haimeng

(The Institute of Biophysics, Academia Sinica; Shanghai Institute of Biochemistry, Academia Sinica)

- 7. Iconographia Cormophytorum Sinicorum and Claves Familiarum
Generumque Cormophytorum Sinicorum** (13)
Wang Wencai, Fang Yancheng and Their Research Group
(The Institute of Botany, Academia Sinica)
- 8. Studies on the Theory of Ancient Chinese Architecture and Architectural
Conservation** (14)
Liang Sicheng, Lin Huiyin, Mo Zongnang, Xu Boan, Lou Qingxi, Guo Daiheng
(Tsing Hua University)
- 9. Discovery of Fivefold Symmetry and the Ti-Ni Quasicrystal** (16)
Guo Kexin, Ye Hongqiang, Li Douxing, Zhang Ze, Wang Duneng
(The Institute of Metal Research, Academia Sinica)
- 10. Geochemistry of Strata bound Deposits in China** (18)
*Tu Guangzhi, Wang Xuzhang, Chen Xianpei, Zhang Baoguo, Yang Weihua, Cheng
Jingping, Fan Wendong, Zhao Zhenhua, Yu Cimei*
(The Institute of Geochemistry, Academia Sinica)
- 11. On Large Sets of Disjoint Steiner Triple Systems** (20)
Lu Jiaxi
(The Ninth Middle School, Baotou City)

SECOND CLASS

- 1. Structure and Regulation of Nitrogen Fixation Genes in Klebsiella
Pneumoniae** (21)
*Shen Shanjiang, Zhu Jiabi, Xue Zhongtian, Kong Qiantong, Jin Runzhi, Yu Yiyi, Ou
Yongxiang, Jiang Qunyi, Yu Guanqiao, Huang Yide*
(Shanghai Institute of Plant Physiology, Academia Sinica)
- 2. Vegetation of China** (23)
*Wu Zhengyi, Hou Xueyu, Zhu Yancheng, He Shaoyi, Zhou Yihang, Li Bo, Wang
Xianpu, Zhang Anshi, Zhou Guangyu*
(The Institute of Botany, Academia Sinica)
- 3. Discoveries and Studies of Asteroids and Comets** (25)
Zhang Yuzhe, Zhang Jiaxiang, Yang Jiexing, Wang Qi, Wei Shuling
(Purple Mountain Observatory, Academia Sinica)
- 4. Comprehensive Investigations on the Physical Environment and Its
Territorial Differentiation of China** (27)
*Huang Bingwei, Chen Shipeng, Hou Xueyu, Shen Yuchang, Zhou Fingru, Liao Ke,
Chen Yu*
(The Institute of Geography, Academia Sinica)
- 5. Complex Geometry and Related Problems** (29)
Zhong Jiaqing
(The Institute of Mathematics, Academia Sinica)

6. **Biologically Active Organophosphorus Compounds and Organophosphorus Chemistry** (31)
Yang Shixian, Chen Ruyi, Chen Tanchi, Li Zhengming, Yang Huazheng, Li Yugui, Jin Guoyu, Tang Chunchi, Shao Ruitan, Wang Hudu, Liu Lianzu, Chen Qiyu
 (Nankai University)
7. **The Theory on the Ajustment of Rotating Atmospheric Motion** (33)
Zeng Qingcun, Ye Du-heng, Li Maicun
 (The Institute of Atmospheric Physics, Academia Sinica)
8. **Critical Point Theory and Its Applications** (35)
Zhang Gongqing, Chang Kuangching
 (Peking University)
9. **The Chemistry of Trichosanthin - Primary, Secondary and Tertiary Structure Determination** (37)
Wang You, Pan Kezhen, Qian Ruiqing, Dong Yucheng, Jin Shanwei, Xia Zongxiang, Gu Ziyue, Wu Shen, Zhang Liqing, Lin Yujuan, Qian Weiwei, Ni Chaozhou, Zhang Xinhui, Ma Yingqi, Xu Shunzhen, Zhang Yongmuo, Zhu Shiquan
 (Shanghai Institute of Organic Chemistry, Academia Sinica; Fujian Institute of Research on the Structure of Matters, Academia Sinica; The Institute of Biophysics, Academia Sinica)
10. **Epidemic System of Wheat Stripe Rust in China** (39)
Chen Shanniang, Wang Kening, Li Zhenqi, Liu Hanren, Zeng Shimai, Lu Duanyi, Xie Shuixian, Wang Jiqing, Ruan Shoukang, Huang Guangming, Wu Liren, Song Weizhong, Yuan Wenhuan, Liu Xiaokun, Hong Xiwu, Yang Shicheng
 (The Chinese Academy of Agricultural Sciences)
11. **Theory of the Stability of Fluid Flows** (41)
Zhou Heng
 (Tianjin University)
12. **Basic Research on Crystal Structures and Crystal Chemistry** (43)
Tang Youqi, Lin Bingxiang, Shao Meicheng, Zhang Wanjiang, Xu Xiaojie, Tang Kahuo, Liu Zhenyi
 (Peking University)
13. **Studies on Structure of Photosynthetic Membrane in Relation to Distribution and Conversion Efficiency of Light Energy** (45)
Tang Peisong, Kuang Tingyun, Zhou Peizhen, Dai Yunling, Lu Rongzhao, Lin Shiqing, Li Luangbi, Xu Chunhui, Zuo Baoyu, Chu Zhongxi, Zhang Qide, Lou Shuqing, Zhang Zhengdong
 (The Institute of Botany, Academia Sinica)
14. **Analysis and Control of Transient Process of Electric Machines and Electric Power Systems** (47)
Gao Jingde, Lu Qiang, Liu Qu, Zhang Liancheng, Zheng Fengshi, Guo Yongji, Gu Yongchang, Wang Zhonghong, Ni Yixun, Wang Xiangheng, Fei Renyan
 (Tsing Hua University)

15. **Applied Quantum Chemistry—Rules of Chemical Bonding and the Electronic Structure of Rare Earth Compounds** (49)
Xu Guangxian, Li Yuemin, Ren Jingqing
 (Peking University)
16. **Genesis, Distribution, Evolution and Revolutionary Changes of Chinese Sedimentary Rocks and Sedimentary Mineral Deposits** (51)
Ye Lianjun, Sun Shu, Fan Delian, Chen Qiyang, Sha Qingan, Zhao Dongxu, Chen Changming, Chen Zhiyun
 (The Institute of Geology, Academia Sinica)
17. **Researches on Mechanisms of Stress Corrosion Cracking and Hydrogen Induced Cracking of Materials** (53)
Xiao Jimei, Chu Wuyang, Zhang Tongyi, Tian Zhongzhuo, Lin Shi, Xiao Zhigang, Gao Peiyu, Wang Yunbin, Chang Xiangrong, Tong Zhaoxiang
 (Beijing University of Iron and Steel Technology)
18. **The Problem of Pseudo Symmetry in Crystal Structure Analysis Treated by Direct Methods** (55)
Fan Haifu, Zheng Qitai, Yao Jiaxing, Qian Jinzi, Gu Yuanxin, Zheng Chaode
 (The Institute of Physics, Academia Sinica)
19. **Biochemical Mechanism of Soman on Acetylcholinesterase** (57)
Zhou Tingchong, Sun Manji, Zhang Zhuogeng, Xiao Meizhen, Huang Ruheng
 (Academy of Military Medical Sciences)
20. **A Study of the Litho-palaeogeography of China—Atlas of the Palaeogeography of China** (59)
Wang Hongzhen, Chu Yuchun, Liu Benpei, Ma Lifang, Fu Kun, Qiao Xiufu, Min Longrui, Yang Jialu, Liu Xun, Zhou Zhengguo
 (Chinese Academy of Geological Sciences: Wuhan College of Geology)
21. **The Discovery and Investigation of Plague Natural Foci in China** (61)
Ji Shuli, He Jianguo, Bai Fanxing, Teng Yunfeng, Zhan Xinru, Lei Zongxi, Wang Wenshao, Qin Changyu, Kang Chenggui, Wang Chengzhu
 (Chinese Academy of Preventive Medical Sciences etc.)
22. **Regulatory Effects of Nitrogenous Metabolites on Biosynthesis of Rifamycin and Validamycin** (63)
Jiao Ruishen, Jin Zhikun, Ni liuying, Gu Weiling, Xia Tianhui, Zhang Yifen, Mei Baigen
 (Shanghai Institute of Plant Physiology, Academia Sinica)
23. **¹²⁷I₂ Hyperfine Lines of Iodine-127 Molecule at 640nm and Investigations of Stabilized He-Ne Laser at 640nm** (65)
Zhao Kegong, Li Chengyang, Xu Jie, Li Yinzhu, Lin Zhenping, Liu Hantian
 (National Institute of Metrology)
24. **Fixed Point Theory of Surface Mappings** (67)
Jiang Boju

(Peking University)

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