PART VI
Completion and Evaluation of NSFC Projects

6.1 Completion of General Program Projects

Completion of General Program Project in 2012

Table 6－1

Projects completed				9,031
Achievements	Papers and publications	Invited speakers	International conferences	18,425
			Domestic conferences	13,595
		Papers and books	International journals	39,771
			Domestic journals	43,160
			Books	4,482
	Research results		Evaluated	258
			Patents	4,263
			Results disseminated	492
	Awards		International awards	141
			National awards	958
			Ministerial or provincial awards	169
Talents fostered			Post－doc	2,317
			Ph. D.	27,253
			Masters	49,864

6.2 Completion of Young Scientists Fund Projects

Completion of Young Scientists Fund Projects in 2012

Table 6－2

Projects completed				4,831
Achievements	Papers and publications	Invited speakers	International conferences	7,278
			Domestic conferences	3,821
		Papers and books	International journals	15,476
			Domestic journals	16,327
			Books	2,189
	Research results		Evaluated	105
			Patents	1,728
			Results disseminated	168
	Awards		International awards	41
			National awards	403
			Ministerial or provincial awards	79
Talents fostered			Post－doc	553
			Ph. D.	6,552
			Masters	15,459

6.3 Completion of Projects of the Fund for Less Developed Regions

Completion of Projects of the Fund for Less Developed Regions in 2012

Table 6－3

Projects completed				680
Achievements	Papers and publications	Invited speakers	International conferences	605
			Domestic conferences	692
		Papers and books	International journals	1,334
			Domestic journals	4,308
			Books	363
	Research results		Evaluated	18
			Patents	123
			Results disseminated	33
	Awards		International awards	3
			National awards	46
			Ministerial or provincial awards	1
Talents fostered			Post－doc	34
			Ph. D.	596
			Masters	3,927

6.4 Completion of Key Program Projects

Completion of Key Program Projects in 2012

Table 6－4

Projects completed				372
Achievements	Papers and publications	Invited speakers	International conferences	3,821
			Domestic conferences	2,471
		Papers and books	International journals	9,948
			Domestic journals	5,444
			Books	621
	Research results		Evaluated	35
			Patents	866
			Results disseminated	101
	Awards		International awards	51
			National awards	149
			Ministerial or provincial awards	40
Talents fostered			Post－doc	631
			Ph. D.	5,147
			Masters	4,960

6.5 Completion of Major Program Projects

Completion of Major Program Projects in 2012

Table 6－5

Projects completed				1
Achievements	Papers and publications	Invited speakers	International conferences	12
			Domestic conferences	0
		Papers and books	International journals	96
			Domestic journals	136
			Books	3
	Research results		Evaluated	0
			Patents	0
			Results disseminated	0
	Awards		International awards	1
			National awards	0
			Ministerial or provincial awards	0
Talents fostered			Post－doc	13
			Ph. D.	64
			Masters	72

6.6 Completion of Major Research Plan Projects

Completion of Major Research Plan Projects in 2012

Table 6－6

Projects completed				233
Achievements	Papers and publications	Invited speakers	International conferences	1,002
			Domestic conferences	599
		Papers and books	International journals	1,882
			Domestic journals	4,467
			Books	86
	Research results		Evaluated	16
			Patents	141
			Results disseminated	5
	Awards		International awards	19
			National awards	48
			Ministerial or provincial awards	10
Talents fostered			Post－doc	201
			Ph. D.	1,653
			Masters	1,840

6.7 Completion of Projects of the National Science Fund for Distinguished Young Scholars

Completion of National Science Fund for Distinguished Young Scholars Projects in 2012

Table 6－7

Projects completed				182
Achievements	Papers and publications	Invited speakers	International conferences	1,345
			Domestic conferences	963
		Papers and books	International journals	4,179
			Domestic journals	1,374
			Books	188
	Research results		Evaluated	19
			Patents	440
			Results disseminated	27
	Awards		International awards	34
			National awards	90
			Ministerial or provincial awards	28
Talents fostered			Post－doc	353
			Ph. D.	2,247
			Masters	2,373

6.8 Completion of Projects the Science Fund for Creative Research Groups

Completion of the Science Fund for Creative Research Groups Projects in 2012

Table 6－8

Projects completed				54
Achievements	Papers and publications	Invited speakers	International conferences	1,625
			Domestic conferences	914
		Papers and books	International journals	4,177
			Domestic journals	912
			Books	144
	Research results		Evaluated	0
			Patents	569
			Results disseminated	83
	Awards		International awards	31
			National awards	63
			Ministerial or provincial awards	23
Talents fostered			Post－doc	458
			Ph. D.	2,877
			Masters	2,862

6.9 Evaluation of Completed Major Research Plan Projects

In 2012, two major research plans were completed and evaluated.

1. Contemporary Studies on Some Key Issues of Traditional Chinese Medicine

In response to major national needs, this major research plan sponsored multidisciplinary researches which was combined the research findings in life sciences and the scientific contents of Chinese medicine. Three key issues of Chinese medicine, which are including syndrome, prescription and acupuncture principles, were carried out based on the originality of fine theory and clinical experiences of Chinese medicine.

This major research plan sponsored and supported 134 projects, among which, 123 projects were in the category of General Program, and 11 were of Key Program.

Main research results are included as follows:

(1) Syndrome study: discovered main biological features of some typical syndromes, revealed evolution process of some syndromes, and marked bio markers related to some syndrome.

(2) Prescription study: developed techniques of separating and identifying multi components of Chinese materia medica, explained the physical basis and functional mechanism of some prescriptions of Chinese medicine, and deepened the understanding of laws of composing prescriptions of Chinese medicine.

(3) Studies on principles of acupuncture: made preliminary discovery and understanding of some biological signal path, adjusting process and functional regions in the brain of acupuncture, discovered some substances closely related to acupuncture therapy, and provided evidence of special properties of meridians and collaterals and acupoints.

(4) Studies on principles of relevance between prescriptions and syndromes: explored relevant biological basis of some syndrome, developed multi indicator method of evaluation based on relevance of prescriptions and syndrome.

The implementation of this major research plan deepened the scientific understanding of syndrome, prescription and acupuncture principles of Chinese medicine, developed preliminary research model with characteristics of Chinese medicine, lifted the research level of basic theory of Chinese medicine and materia medica, developed technology that suits basic research on Chinese medicine and materia medica, fostered a research team composed of multi disciplinary subjects, expanded the influences of Chinese medicine and materia medica,, and set solid foundation for creative research on Chinese medicine and materia medica.

2. Several Key Issues in Energy Use and Environmental Protection in the Western Regions of China

This major research plan started in 2002. Focusing on the strategies of development and utilization of energy resources in the west, the utilization of traditional energy and new energy sources, and several basic problems in energy projects in the west, the Expert Steering Group made top design from strategic level and set up a series of research projects. A total of 133 projects were supported, in which 177 were in the category of General Program, 16 in Key Program, covering 17 disciplines in 5 depart ments, namely, mathematics and physics, chemistry, engineering and materials, earth and management sciences.

This major research plan has made significant progress in the following areas:

(1) On the research of energy and environment strategies in the west, it made systematic analysis of the complexity of evolution of energy system structure of the west, constructed theory and method of modeling of energy development and utilization systems in the west, developed theory and method for evaluation of mining rights of coal mine resources in the west based on options, proposed policy system for tax reform of mine resources, established theory of development for coordination of energy systems in the west and east of China,

and supported the decision making of the central and provincial governments in the west on energy strategy and low carbon development..

(2) On the research of multifunctional energy systems, it made in–depth studies on basic relations for grades relevance of energies such as chemical energy of fuel, Gibbs free energy and thermal energy, etc., revealed essence of chemical energy transformation in grades interactions of Gibbs free energy and thermal energy, made systematic explanations on the principle of stepped utilization of chemical energy of fuel, proposed with originality a multiple combined production system of coal based liquid replacing fuel and power without regulation of proper cycles, and made important progress in theory of stepped utilization of chemical energy of fuel.

(3) On the research of the clean and efficient conversion and utilization of coal, it solved the problem of blocking the deep–sieve by fine wet particles of coal in coal selection process, developed successfully clean method for efficient dry separation and selection of coals in the west, revealed laws of changes in transport behavior and enrichment of special polluting elements of sulfur, mercury and arsenic during combustion and conversion process, developed technologies of de–coupling combustion of coal and simultaneous de–sulfur and de–nitrogen of dried smoke and gas and re–use of sulfur, made multi scale studies on the composition, gathering structural characteristics of weak reduction coals in the west, developed new process of catalyzing and oxidization by methane and carbon dioxide and thermal coupled decomposition of coal, and set up scientific basis for efficient, clean and low carbon use of low grade coals.

(4) On the research of the utilization of solar energy, by using innovative sedimentation –hydrothermal method, it designed and prepared new, stable, efficient and low cost Cd0.5Zn0.5S as photo catalyst without precious metal load, developed method of producing hydrogen by water decomposition with photo catalyst using solar energy; proposed new method of energy release by low temperature gathering of solar energy and complimenting grades of fossil fuel, and provide new ways of efficient and low cost electric power generation by solar energy.

(5) On the research of basic problems of energy projects in the west, it revealed the discharge characteristics and ice covering mechanism of insulator in ultra-high voltage power transmission under high altitude and dirty conditions,, proposed experimental method and principles of design of exterior insulation in high altitude, ice covered and dirty conditions, which was successfully applied in the first ultrahigh voltage direct current transmission project in the world; proposed new method of evaluating safety parameters of earthquake resisting abilities of high dams, solved long term stability problems of tunnels under strong earth quake conditions in water resources projects in the west; and based on studies on hydraulic vibration and stability of giant mixed flow water turbine, solved problems in optimal design and operation stability of water turbine in the Three Gorges power station, and made contributions to domestic production of giant water turbine units in China.

6.10 Major Research Plan in the Tenth Five-Year Plan of NSFC

Evaluation of Completed Major Research Plan Projects in 2012

Table 6 – 9

Name of Major Research Plan		Contemporary studies on some key issues of traditional Chinese medicine	Several Key Issues in Energy Use and Environmental Protection in the Western Regions of China
Total number of projects funded	General Program projects	123	117
	Key Program projects	11	16
Total funding (10,000 yuan)		5,500	5,500
Papers and books	International journals	371	665
	Domestic journals	986	1,669
	Books	204	49
Awards	National awards	8	13
	Ministerial or provincial awards	45	43
	International awards	0	5
Patents		54	149
Results disseminated		9	41
Talents fostered	Post – doc	83	68
	Ph. D.	406	524
	Masters	605	841

Note: "Contemporary studies on some key issues of traditional Chinese medicine" and "Several Key Issues in Energy Use and Environmental Protection in the Western Regions of China" were the third batch of Major Research Plan started in the 10th Five-year Plan. Figures in this table are from summary reports of the Expert Steering Groups of these Major Research Plans.

6.11 Statistics of the NSFC's Support to the Winners of the National Natural Science Award in 2012

In 2012, there was no winner of the first class prize of the National Natural Science Awavd, and all 41 winnres of the second class prize obtained Previously the Funding from NSFC.

NSFC's Support to the Winners of the Second Class Prizes of the National Natural Science Award in 2012

Table 6 – 10

	Project title	Principal investigators	Recommended by	Main Titles of NSFC projects	Number of grants
1	Module space degeneration and stability of vector bundles	Sun Xiaotao (Academy of Mathematics and Systems Science, Chinese Academy of Sciences, CAS)	Chinese Academy of Sciences	Algebraic geometry	1
2	Large dimension random matrix theory and its application	Bai Zhidong (Northeast Normal University)	Jilin Province	Large dimension random matrix theory and its application in wireless communications	5
3	Some mathematical theories of conservation laws and Boltzmann equations	Yang Tong (City University of Hong Kong)	Zhou Yulin, Li Daqian, Shi Zhongci	Partial differential equations	2
4	Studies on theory of singular self – spin properties in low dimensional strong relevance electronic system	Wang Yupeng (Institute of Physics, CAS) Cao Junpeng (Institute of Physics, CAS) Zhang Ping (Institute of Applied Physics and Computational Mathematics) Chen Shu (Institute of Physics, CAS) Dai Jianhui (Zhejiang University)	Chinese Academy of Sciences	Studies on strong relevant electronic systems and meso systems at extremely low temperatureStudies on electronic state properties of low dimensional strong relevant systems	26
5	Research on "golden cage" and nano structure change in external field	Gong Xingao (Fudan University), Sun Deyan Institute of Solid State Physics, CAS, Liu Zhifeng (Chinese University of Hong Kong), Gu Xiao (Fudan University), Ji Min (Fudan University)	Ministry of Education	Simulation and computation of thermal conduction of low dimensional nano system	17
6	Quantum computation based on self spin of nuclei	Du Jiangfeng (University of Science and Technology of China)	Ministry of Education	Theory and experimental studies on quantum computation and quantum simulation using electron and nuclear self spin in solid	8
7	Discovery of "exceeding energy spectrum of high energy electron and cosmic rays"	Chang Jin (Purple Mountain Observatory , CAS)	Chinese Academy of Sciences	Observation of high energy electron and gamma rays in space	6

Table 6 – 10

	Project title	Principal investigators	Recommended by	Main Titles of NSFC projects	Number of grants
8	Studies on 3 – D chemical control and catalyst reaction based on side arm strategy	Tang Yong (Shanghai Institute of Organic Chemistry, CAS), Sun Xiuli (Shanghai Institute of Organic Chemistry, CAS) Ye Song (Shanghai Institute of Organic Chemistry, CAS) Zhou Jian (Shanghai Institute of Organic Chemistry, CAS) Kang Yanbiao (Shanghai Institute of Organic Chemistry, CAS)	Shanghai Municipality	Some new types of Ye Lide´s annulationsSynthesis of new types of chiral trisoxasolines and its applications in asymmetric synthesis	33
9	Design and synthesis of organic porous crystals with special structures	Yu Jihong (Jilin University); Pang Wenqin (Jilin University); Li Jiyang (Jilin University); Li Yi (Jilin University); Xu Ruren (Jilin University)	Ministry of Education	Structural design and directional synthesis of organic crystal functional materials for open skeletons	23
10	Design and synthesis of nitrogen chiral catalyst and its asymmetric catalyzed organic reactions	Feng Xiaoming (Sichuan University); Liu Xiaohua (Sichuan University); Lin Lili (Sichuan University)	Ministry of Education	Catalyzed asymmetric silylcyanation of ketone as new types of double functional catalyst with chiral nitrogen oxygen dipole	19
11	Safety of nano materials	Zhao Yuliang (Institute of High Energy Physics, CAS), Chen Chunying (National Centre for Nano Science and Technology), Wang Haifang Peking University), Feng Weiyue (Institute of High Energy Physics, CAS), Chai Zhifang (Institute of High Energy Physics, CAS)	Chinese Academy of Sciences	Cell and molecular toxicology of carbon nano materialsStudies on long term exposure of low content nano materials in research and surrounding areas and its toxicological effect	29
12	Design and production of environmental friendly functional materials based on natural polymer and the relationship between structure and function	Zhang Lina (Wuhan University); Du Yumin (Wuhan University); Cai Jie (Wuhan University); Chen Lingyun (Wuhan University); Zhou Jinping (Wuhan University)	Hubei Province	Structure and performance of water resistant soy plasticsGreen synthesis, dissolution of cellulose Carbamate and preparation of new types of fiber	19

Table 6 – 10

	Project title	Principal investigators	Recommended by	Main Titles of NSFC projects	Number of grants
13	Efficient separation and characterization of complex bio samples	Zou Hanfa (Dalian Institute of Chemical Physics, CAS), Zhang Lihua (Dalian Institute of Chemical Physics, CAS), Ye Mingliang (Dalian Institute of Chemical Physics, CAS), Wu Ren´an (Dalian Institute of Chemical Physics, CAS), Zhang Yukui (Dalian Institute of Chemical Physics, CAS)	Liaoning Province	Efficient separation and characterization of complex systems	44
14	Chemical simulation and structural functional relations of metal enzymes	Mao Zongwan (Sun Yat – sen University); Ji Liangnian (Sun Yat – sen University); chaohui (Sun Yat – sen University); Liu Jianzhong (Sun Yat – sen University); Lu Tongbu (Sun Yat – sen University)	Guangdong Province	Structural hybridization and biomedical functions of metal enzyme and active simulators	40
15	Physical and chemical properties and process of formation of aerosol such as soil and dust particles and climate and its relations to climate and environmental changes	An Zhisheng (Institute of Earth Environment, CAS), Zhang Xiaoye (Institute of Earth Environment, CAS), Cao Junji (Institute of Earth Environment, CAS), Li Shuncheng (Hong Kong Polytechnic University), Liu Xiaodong (Institute of Earth Environment, CAS),	Chinese Academy of Sciences	Physical and chemical properties and source analysis of atmospheric carbon aerosols of dust particles in source regions in AsiaFormation and impart factors of secondary carbon aerosols and its environmental significance	36
16	Accretive orogenesis in mid – Asia and its environmental effects	Xiao Wenjiao (Institute of Geology and Geophysics, CAS), Sun Jimin (Institute of Geology and Geophysics, CAS), Gao Jun (Institute of Geology and Geophysics, CAS)	Chinese Academy of Sciences	Tectonic pattern and deformation period in south west Kunlun and its accretive orogenesis	25
17	Mechanism of formation of atmospheric pollutant aerosols in China and its impact on urban air quality	Zhuang Guoshun (Fudan University); Guo Zhigang (Fudan University); Huang Kan (Fudan University); Sun Yele (Fudan University); Wang Ying (Fudan University)	Shanghai Municipality	Origin, transformation of aerosol in China and its impact on climate	19

Table 6 – 10

	Project title	Principal investigators	Recommended by	Main Titles of NSFC projects	Number of grants
18	A study on climate change in China in the past 2000 years	Ge Quansheng (Institute of Geographic Sciences and Natural Resources Research, CAS), Wang Shaowu (Peking University), Shao Xuemei (Institute of Geographic Sciences and Natural Resources Research, CAS), Zheng Jingyun (Institute of Geographic Sciences and Natural Resources Research, CAS), Yang Bao (Cold and Arid Regions Environmental and Engineering Research Institute, CAS)	Chinese Academy of Sciences	Patterns and simulation and diagnosis of rain belt in east China monsoon regions in the past 300 years Reconstruction of climate change in east part of Chaidamu basin of Qinghai in the past 2000 yearsClimate change and simulation in Qinghai – Tibet Plateau in the past 2000 years	30
19	Mechanism of molecular and genetic regulation of complex properties of rice	Lin Hongxuan (Shanghai Institutes for Biological Sciences, CAS), Gao Jiping (Shanghai Institutes for Biological Sciences, CAS), Ren Zhonghai (Shanghai Institutes for Biological Sciences, CAS), Song Xianjun (Shanghai Institutes for Biological Sciences, CAS), Jin Jian (Shanghai Institutes for Biological Sciences, CAS)	Shanghai Municipality	Basic research on genetics of rice qualities-Nechanism of genetic regulation on new SDL gene with saline and draught assistance properties	8
20	Origin and mechanism of genetic evolution of new and young genes	Wang Wen (Kunming Institute of Zoology, CAS), Yang Shuang (Kunming Institute of Zoology, CAS), Zhou Qi (Kunming Institute of Zoology, CAS), Cai Jing (Kunming Institute of Zoology, CAS), Li Xin (Kunming Institute of Zoology, CAS)	Yunnan Province	Origin and evolution of new genes	12
21	Origin and evolution of immunology of vertebrates	Xu Anlong (Sun Yat – sen University); Huang Shengfeng (Sun Yat – sen University); Yuan Shaochun (Sun Yat – sen University); Chen Shangwu (Sun Yat – sen University); Yu Yanhong (Sun Yat – sen University)	Ministry of Education	Bio – informatics and functional simulation of life systemsWhole region sequence analysis of HLA of Chinese and its application in genetic positioning of auto immunological diseases	13

Table 6 – 10

	Project title	Principal investigators	Recommended by	Main Titles of NSFC projects	Number of grants
22	Mechanism of stomata regulation of plants in response to draught	Song Chunpeng (Henan University); Zhang Xiao (Henan University); Miao Yuchen (Henan University); Jiang Jing (Henan University); An Guoyong (Henan University)	Henan Province	Conduction of oxidation signal of guard cells and molecular basis of its regulation of plant adaptation to adversary environment	21
23	Discovery and applications of several new functions of nano materials	Yan Xiyun (Institute of Biophysics, CAS), Liang Wei (Institute of Biophysics, CAS), Wang Erkang (Changchun Institute of Applied Chemistry, CAS), Gu Ning (Southeast University), Yang Dongling (Institute of Biophysics, CAS)	Beijing Municipality	Exploring simulation and its application of nano material enzymeMechanism of enhancing activity and effect of cancer curing drugs by nano micelles	47
24	Basic research on acoustic communication behavior and hearing of Odorrana tormota	Shen Junxian (Institute of Biophysics, CAS), Xu Zhimin (Institute of Biophysics, CAS), Yu Zulin (Institute of Biophysics, CAS)	Chinese Academy of Sciences	Basic research on acoustic communication behavior and hearing of Odorrana tormotaBasis of biophysics of high frequency acoustic communication of frogs	12
25	Systematic analysis of active components in complex system of Chinese medicine and its application in quality standard	Guo De'an (Peking University), Yemin (Peking University), Wu Wanying (Shanghai Institute of Materia Medica, CAS), Guan Shuhong (Shanghai Institute of Materia Medica, CAS), Liu Xuan (Shanghai Institute of Materia Medica, CAS)	State Administration of Traditional Chinese Medicine	Analysis of chemical composition and internal metabolism of complex Chinese medicine systems	9

Table 6 – 10

	Project title	Principal investigators	Recommended by	Main Titles of NSFC projects	Number of grants
26	Physiological function and mechanism of maintaining tissue stability by TGF – β/Smad signal channel	Yang Xiao (Institute of Bio Engineering, Academy of Military Medical Sciences), Teng Yan (Institute of Bio Engineering, Academy of Military Medical Sciences), Wang Jian (Institute of Bio Engineering, Academy of Military Medical Sciences), Lan Yu (Institute of Bio Engineering, Academy of Military Medical Sciences), Sun Qiang (Institute of Bio Engineering, Academy of Military Medical Sciences)	Beijing Municipality	Function and mechanism of TGF – beta signal channel related miRNA in development of cardiovascular system and stability maintaining	15
27	Molecular mechanism, chemical basis and clinical features of berberine relieving hyperlipidemia	Jiang Jiandong (Institute of Medicinal Biotechnology, Chinese Academy of Medical Sciences), Song Danqing (Institute of Medicinal Biotechnology, Chinese Academy of Medical Sciences), Wei Jing (The First Affiliated Hospital of Nanjing Medical University), Kong Weijia (Institute of Medicinal Biotechnology, Chinese Academy of Medical Sciences), Pan Huaining (The First Affiliated Hospital of Nanjing Medical University)	Ministry of Health	The first bio target of exploring new mechanism of reducing hyperlipidemia by chemical construction of berberine molecular probes	5
28	Wireless multi media coordinated communication model and performance optimization	Lu Jianhua (Tsinghua University); Zhu Wenwu (Microsoft Research Asia), Zhang Qian (Microsoft Research Asia), Yin Liuguo (Tsinghua University); Tao Xiaoming (Tsinghua University)	Ministry of Industry and Information Technology	System, theory and application of New generation of wireless network multi media	12
29	Theory and method of real time diagnosis, separation and evaluation of control systems	Zhou Donghua (Tsinghua University); Ye Hao (Tsinghua University); Zhong Maiying (Tsinghua University); Fang Chongzhi (Tsinghua University); Wang Guizeng (Tsinghua University)	CAST	Theory and key technology of problem prediction and maintenance for complex engineering systems	21

Table 6 – 10

	Project title	Principal investigators	Recommended by	Main Titles of NSFC projects	Number of grants
30	Theory and method of modeling of total life cycle software system architecture	Mei Hong (Peking University); Huang Gang (Peking University); Zhang Lu (Peking University); Zhang Wei (Peking University)	Ministry of Education	Method and technology of trustworthy software construction driven by system architecture	18
31	Basic theory and application of several new types of nonlinear circuit and systems	Lv Jinhu (Academy of Mathematics and Systems Science (AMSS) in the Chinese Academy of Sciences), Chen Guanrong (City University of Hong Kong), Yu Simin (Guangdong University of Technology)	Chinese Academy of Sciences	Control of complex dynamic network and its application in mechanical systems	7
32	Pattern recognition and spatial temporal analysis of neural bio information	Hu Dewen (National University of Defense Technology); Wang Zhengzhi (National University of Defense Technology); Zhou Zongtan (National University of Defense Technology); Xu Xin (National University of Defense Technology); Liu Yadong (National University of Defense Technology)	PLA General Armament Department	Modeling of bio visual information processing mechanism and identification of target shape	17
33	Some basic problems in micro structure and functional regulation of zinc oxide membrane	Pan Feng (Tsinghua University); Zeng Fei (Tsinghua University); Song Cheng (Tsinghua University); Yang Yuchao (Tsinghua University); Liu Xuejing (Tsinghua University)	Ministry of Education	Formation and magnetizing behavior of meta stable magnetic phase in membrane	9
34	Construction of organic nano functional materials by characteristic directional structures	Xie Yi (University of Science and Technology of China); Wu Changzheng (University of Science and Technology of China); Xiong Yujie (University of Science and Technology of China)	Chinese Academy of Sciences	Chemical preparation and properties of nano materials and nano structures	14

Table 6 – 10

	Project title	Principal investigators	Recommended by	Main Titles of NSFC projects	Number of grants
35	Discovery of new types of magnetic thermal materials and studies on related scientific problems	Shen Baogen (Institute of Physics, CAS), Hu Fengxia (Institute of Physics, CAS), Sun Jirong (Institute of Physics, CAS) Zhang Xixiang (Hong Kong University of Science and Technology), Wu Guangheng (Institute of Physics, CAS)	Chinese Academy of Sciences	Physical mechanisms of magnetic thermal effect of rare earth and transition element compound	33
36	Non uniform deformation of complex components and laws of precision plastic molding	Yang He (Northwestern Polytechnical University), Zhan Mei (Northwestern Polytechnical University), guo Lianggang (Northwestern Polytechnical University), Li Hongwei (Northwestern Polytechnical University), Sun Zhichao (Northwestern Polytechnical University)	Ministry of Industry and Information Technology	Non uniform deformation of large and complex titanium alloy component under isothermal local loading and regulation of organizational integration	17
37	Theory and method of geometric deduction in digital manufacturing of complex surfaces	Ding Han (Huazhong University of Science and Technology), Zhu Xiangyang (Shanghai Jiao Tong University), Yin Zhouping (Huazhong University of Science and Technology), Zhu Limin (Shanghai Jiao Tong University), Wang Yu (Chinese University of Hong Kong))	Ministry of Education	Dynamics and active control of 5 axis digital processing of parts with complex surfaces	29
38	Flow and heat and mass transfer mechanism in multi scale and multi physical field coupled complex systems	He Yaling (Xi´an Jiaotong University), Tang Guihua (Xi´an Jiaotong University), Zhao Tianshou (Hong Kong University of Science & Technology), Min Chunhua (Xián Jiaotong University)	Ministry of Education	Basic research on mechanism and performance optimization of solar energy heat absorber in non uniform and instable state with multi physical multi scale and multi field coupling	12

Table 6 – 10

	Project title	Principal investigators	Recommended by	Main Titles of NSFC projects	Number of grants
39	Physics and mechanics of low dimensional nano functional materials and device principles	Guo Wanlin (Nanjing University of Aeronautics and Astronautics), Hu Haiyan (Nanjing University of Aeronautics and Astronautics), Zhang Tianzhong (Shanghai University), Guo Yufeng (Nanjing University of Aeronautics and Astronautics), Wang Lifeng (Nanjing University of Aeronautics and Astronautics)	Ministry of Education	Physics and mechanics of mechanical electro – magnetic coupling and device principles of low dimensional functional material structures	34
40	Basic research on piezoelectric and electromagnetic sensitive materials and their structural mechanical behavior	Shen Yapeng (Xi´an Jiaotong University), Chen Changqing (Xi´an Jiaotong University), Tian Xiaogeng (Xi´an Jiaotong University), Wang Zikun (Xi´an Jiaotong University), Wang Xu (Xi´an Jiaotong University)	Ministry of Education	Mechanical electrical coupling characteristics of type 1 – 3 piezoelectric ferro electric composite materials and its engineering applicationsStudies on constitutive behavior of ferro – electric single crystals and its composite materials	10
41	Theoretical advancement and application of nonlinear stress wave propagation	Wang Lili (Ningbo University), Ren Huiqi (The Third Institute of Engineering, Headquarters of the General Staff of the P. L. A), Yu Jilin (University of Science and Technology of China), Zhou Fenghua (Ningbo University), Wu Xiangyun (The Third Institute of Engineering, Headquarters of the General Staff of the P. L. A)	Ningbo Municipality	Impact of stress wave on instable visco – plastic flow, damage evolution and fracture of materials under one dimensional shock stretch	15

6.12 Statistics of the NSFC's Support to the Winners of the National Technology Invention Award in 2012

In 2012, there were 2 winners of the first-class prize of the National Award for Technology Invention (in the general category). All of them obtained previously some types of funding from NSFC.

NSFC's Support to the Winners of the First Class Prizes of the National Award for Technology Invention

Table 6 – 11

	Project title	Principal investigators	Recommended by	Titles of NSFC projects	Number of grants
1	3-D video reconstruction and display technology and devices	Dai Qionghai (Tsinghua University), Ji Xiangyang (Tsinghua University), Liu Huabin (Tsinghua University), Cao Xun (Tsinghua University), Ge Zhang (Shenzhen Chaowei Photoelectric Company), Yang Yi (Beijing Lingyun Photo video Digital Imaging Technology Company)	Ministry of Education	Data driven multi dimensional media sensing and understandingReconstruction of cplex scenario based on vision field computational theory3-D grid modeling and coding algorithm	12
2	New technology and application of large span steel concrete combinatory structures	Nie Jianguo (Tsinghua University), Fan Jiansheng (Tsinghua University), Tao Muxuan (Tsinghua University), Zhang Zhenxue (Tianjin Insititue of Urban Construction), Wen Lingyan (Tsinghua University), Pu Fanmin (Tsinghua University)	China State Construction	New types of steel concrete combinatory structure systems	16

6.13 Statistic of the NSFC's Support to the Winners of the National Science and Technology Progress Award in 2012

In 2012, there were 2 winners of the special class (in the general category) and 13 winners of the first class prize (in the general category) of the National Award for Science and Technology Progress. Among them, the 2 special class winners and 11 first class winners obtained some funding from NSFC previously.

NSFC's Support to the Winners of the Special Class Prizes of the National Award for Science and Technology Progress

Table 6 – 12

	Project title	Principal investigators	Principal home institutions	Recommended by	Title of NSFC´s project	Number of projects awarded
1	Key technology, set equipment and engineering application of ultra high voltage power transmission	Liu Zhenya, Chen Weijiang, Mi Chuanlong, Lin Jiming, Shu Yinbiao, Zhang Xile, Sun Xin, Zhong Juntao, Zheng Baosen, Yin Yonghua, Zhang Meng, Han Xiancai, Wang Shaowu, Sun Yongheng, Peng Kaijun, Ding Yang, Han Shumo, Wang Jianping, Yao Sili, Zhang Jiankun, Yuan Jun, Zhou Xiaoxin, Liu Zehong, Wan Qifa, Zahng Xiyuan, Su Zhiyi, Li Guangfan, Wu Zhirong, Wang Jingchao, Wu Xiong, Li Zheng, Hu Yi, Dang Zhenping, He Min, Liang Cong, Zhao Lianqi, Ren Chunyang, Zhang Guoliang, Li Ruisheng, Wang Yonggang, Liao Junde, Yang Lin, Yang Wen, Sun Zhusne, Liu Kaijun, Guo Jianbo, Ma Bin, Li Minjie, Liu Hongtao, Liu Peng	State Grid, China XD Group, China Power Engineering Consulting Group Corporation, China Electric Power Research Institute, Tebian Electric Apparatus Shenyang Transformer Group Co., Ltd., State Grid Electric Power Research Institute, Baoding Tianwei Baobian Electric Co., Ltd, State Grid AC Engineering Co., Xi'an XD Transformer Co, Ltd, Xi´an High Voltage Apparatus Research Institute, Xian XD Switchgear Electric Co., Ltd, Henan Pinggao Electric Co., Ltd., NHVS, TBEA Hengyang Transformer Co., Ltd., China Power Engineering Consulting Corporation North China Power Engineering Co., Ltd., East China Electric Power Design Institute, Central Southern China Electric Power Design Institute of China Power Engineering Consulting Group Corporation, Northeast Electric Power Design Institute, Southwest Electric Power Design Institute, Northwest Electric Power Design Institute, State Grid Operation, Tsinghua University, Xi'an Jiaotong University, Shanxi Electric Power Corporation, Henan Electric Power Corporation, Hubei Electric Power Corporation, Guilin Power Capacitor Co., Ltd, Xuji Group, Xian XD high voltage porcelain insulator Co. Ltd., Dalian Insulator Group	Chinese Society for Electrical Engineering	Basic research on flexible control of over voltage operation and lightning shield technology for UHV transmission system	7

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	Project title	Principal investigators	Principal home institutions	Recommended by	Title of NSFC ´s project	Number of projects awarded
2	Studies on and industrial application of safe and efficient technology for development of very large and deep high sulfur containing gas field	Cao Yaofeng, Kong Fanqun, Wang Shouping, Zeng Daqian, Shen Shen, Liu Yijiang, Chen Weiguo, Jiang Yiwei, Zhang Qingsheng, Li Mingzhi, Sun Lili, Liu Chuanxi, Sun Xiaochun, Zhao Jingzhou, Deng Yunfeng, Hu Qunái, Liu Dexu, Xu Weidong, Sheng Zhaoshun, Wang Zhaomin, Wu Xinrong, Zhang Shimin, Yan Guangqing, Yang Faping, Bi Jianxia, Hou Shugang, Wu Xiaodong, Yin Taiju, Zhang Zhonghua, Xu Wenyan, An Bingtao, Li Hao, Wang Weihong, Guo Xiao, Chen Changfeng, Liu Diyuan, Gu Xiaohong, Zhao Kailiang, Zhu Dehua, Xiong Lianggan, Guo Qiang, Jin Xiuju, Gong Jinhai,Peng Xinling, Chen Daoyuan, Zhang Wenchang, Huang Xuesong, Miao Hong, Liu Xiaomin, Liu Honglei	SINOPEC Zhongyuan Oilfield Company, SINOPEC Engineering Incorporation, SINOPEC Exploration & Production Research Institute, Southwest Petroleum University, China Academy of Safety Sciences and Technology (CASST), China University of Petroleum, Beijing Campus, Yangtze University, Baosteel Group Corporation, Tianjin Pipe (Group) Corporation, Beijing Aerospace Propulsion Institute	China Petrochemical Corporation	Studies on the public safety and protection strategy for development of sulfur containing gas field based on the case of Sichuan and Chongqing regions	11

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Table 6 – 13

	Project Title	Principal investigators	Principal home institutions	Recommended by	Title of NSFC's project	Number of projects awarded
1	Key technology and industrialization of independent design and manufacturing of shield tunneling equipment	Yan Huayong, Hong Kairong, Zhang Minqing, Han Yali, Wei Jianhua, Yang Lei, Li Jianbin, Gong Guofang, Huang Sheng, Xie Haibo, Zhang Zhiguo, Liu Zhenyu, Huang Jian, Chen Kui, Ying Qunwei	Zhejiang University, Shanghai Tunnel Engineering Co., Ltd, China Railway Tunnel Group, China Railway Tunneling Equipment Co., Ltd, Hangzhou Boiler Group Co., Ltd	Ministry of Education	Studies on micro scale circular gap flow and mechanism of high pressurized shear cavity	19
2	Innovations in diagnosis and treatment of prostate cancer and applications of key technology	Sun Yinghao, Gao Xin, Ye Dingwei, Liu Mingyao, He Dalin, Niu Yuanjie, Shang Zhiqun, Li Lei, Yi Zhengfang, Gao Xu, Zhou Tie, Pang Jun, Zhang Hailiang, Ren Shancheng, Wang Huiqing	The First Affiliated Hospital of the Second Military Medical University of PLA, the Third Affiliated Hospital of Sun Yat – sen University, Fudan University Shanghai Cancer Center, East China Normal University, the First Affiliated Hospital of Xi´an Jiaotong University, Tianjin Institute of Urology	General Logistics Department	Comparison of androgen receptors and genes of prostate cancer between people in the east and the west	33

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	Project Title	Principal investigators	Principal home institutions	Recommended by	Title of NSFC's project	Number of projects awarded
3	Key technology and applications of efficient use of complex and hard to treat nickel cobalt resources	Yang Zhiqiang, Wan Aidong, Wang Hua, Wu Jun, Zhou Min, chen Zijiang, Liu Yuqiang, Shao Jianhui, Jiang Kaixi, Duan Xixiang, Wang Haizhou, Li Shangyong, Bao Guozhong, Shen Yongfeng, Chen Ailiang	Jinchuan Group, China ENFI Engineering Corporation, Kunming University of Science and Technology, Beijing General Research Institute of Mining and MetallurgyCentral South University, Northeastern University, Northwest Research Institute of Mining and Metallurgy	China Nonferrous Metals Industry Association	Basic research on separation of copper from nickel solution by sulfur nickel carbonate method	9
4	Project of intercity train between Beijing and Tianjin	He Huawu, Zheng Jian, Sun Shuli, Ren Runtang, Zhang Mei, Fan Jianguo, Wang Zhijian, Kang Xiong, Liu Weiqun, Wang Xuefu, Liang yi, Wang Yunbo, Zhang Xiuguang, Gao Feng, Yu Weiping	The Third Railway Survey and Design Institute Group Corporation, Beijing – Tianjin Intercity Railway Co. Ltd., Engineering Design and Evaluation Center of Ministry of Railway, Engineering Management Center of Ministry of Railway, China Academy of Railway Sciences, China Railway Group Limited, China Railway Construction Co. Ltd., China Railway Signal & Communication Corporation, Beijing Railway Administration, Tangshan Railway Vehicle Co., Ltd.	Ministry of Railway	Strategic research on the safety, environmental impact and economics of rail transport	3

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	Project Title	Principal investigators	Principal home institutions	Recommended by	Title of NSFC's project	Number of projects awarded
5	Mechanism of formation of tumor blood vessel and its application in therapy of anti vessel generation	Bian Xiuwu, Guan Xinyuan, Shou Chengchao, Jiang Binghua, Yang Zhihua, Lin Li Jiami, Peng Weihong, Fang Weigang, Lou Jinning, Kong Xiangfu, Ping Yifang, Liu Lingzhi, Yao Xiaohong, Yu Shicang, Jiang Xuefeng	The Third Military Medical University of PLA, University of Hong Kong, Peking University, Nanjing Medical University, Cancer Institute and Hospital, Chinese Academy of Medical Sciences, Chinese University of Hong Kong, Chengdu Hengji Medical S&T Co., China Japan Friendship Hospital, Shanghai Institutes for Biological Sciences, CAS	Chinese Anti – Cancer Association	The function and mechanism of glial tumours stem cells in vasculogenic mimicry	52
6	Key technology of disease and virus control for important animals	Jin Ningyi, Liao Ming, Cheng Shipeng, Tu Changchun, Gao Yuwei, He Qigai, Liu Qi, Zhao Yarong, Ren Tao, Yan Xijun, Xiao Shaobo, Jin Kuoshi, Lu Huijun, Xin Chao´an, Wu wei	Institute of Military Veterinary, Academy of Military Medical Sciences, South China Agricultural University, Huazhong Agricultural university, Center for Animal Disease Control of Guangxi, Da Bei Nong Group	Jilin Province	Ecology and molecular epidemic studies on four major virus of livestock in China	22

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	Project Title	Principal investigators	Principal home institutions	Recommended by	Title of NSFC's project	Number of projects awarded
7	Establishment and application of integrative treatment technology for Puccinia striiformis base of wheat in China	Chen Wanquan, Kang Zhensheng, Ma Zhanhong, Xu Shichang, Jin Dulin, Jiang Yuying, Pu Chongjian, Shen Li, Song Jianrong, Wang Baotong, Zhang Zhongjun, Zhao Zhonghua, Peng Yunliang, Zhang yuejin, Liu Taiguo	Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Northwest A&F University, China Agricultural University, NATESC, Institute of Plant Protection, Gansu Academy of Agricultural Sciences, Institute of Plant Protection, Sichuan Academy of Agricultural Sciences, Institute of Agricultural Sciences of Tianshui Municipality, Plant Protection and Quarantine Station of Gansu, Plant Protection Station of Sichuan, Institute of Wheat of Gansu Academy of Agricultural Sciences	Ministry of Agriculture	Mechanism of wheat resistance to Puccinia striiformis	33
8	Field survey and studies on natural drug resources in low altitude plateau regions	Zhu Zhaoyun, Gao Li, Qi yufang, Wang Jingkun, Fu Dehuan, Zhao Yi, Qu Bin, Zhang Renwei, Li Xuefang, Cui Tao, Ren Yongfu, Zhang Zhiqing, Yang Shengyuan, Zhou Peijun, Wei Qunhui	Institute of Materia Medica, Yunnan Province	Yunnan Province	Data base of ethnic Materia Medica resources in Yunnan	1

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	Project Title	Principal investigators	Principal home institutions	Recommended by	Title of NSFC's project	Number of projects awarded
9	Establishment of Chinese ecosystem research network and demonstration of observation research and experiments	Sun Honglie, Chen Yiyu, Shen Shanmin, Zhao Shidong, Zhao Jianping, Han Xingguo, Zhang Jiabao, Yu Guirui, Liu Guobin, Qin Boqiang, Zhao Xinquan, Ma Keping, Ouyang Zhu, Yang Linzhang, Li Yan	Institute of Geographic Sciences and Natural Resources Research, CAS, Institute of Applied Ecology, CAS, Institute of Soil Science, CAS, Institute of Botany, CAS, Institute of Hydrobiology, CAS, Cold and Arid Regions Environmental and Engineering Research Institute, CAS, Institute of Soil and Water Conservation, CAS and MWR, Northeast Institute of Geography and Agroecology, CAS, South China Botanical Garden, CAS, Institute of Mountain Hazards and Environment, CAS	Chinese Academy of Sciences	Studies on the response of major land ecosystems in China to global change and adaptive sample transect Regional and global research on grassland ecosystem: problem and prospect	58
10	Studies on key engineering technology of TD – SCDMA and its industrial applications	Zhen Caiji, Li Yue, Cao Shumin, Chen Shanzhi, Wang Xiaoyun, Yang Jiajun, Zhou Jianming, Wang Zhiqin, Liu Dijun, Wang Xicheng, Zhang Ping, Zhang Shaojing, Zhao Xianming, Wang Yuan, Yang Hua	China Mobile, Datang Telecom Technology & Industry Group, China Academy of Telecommunication Research (CATR) of the Ministry of Information Industry Technology (MIIT), ZTE Corporation, Spreadtrum Communications (Shanghai), Beijing University of Posts and Telecommunications, TD – SCDMA Industry Alliance, China Potevio, Lenovo Mobile Communications	Ministry of Industry and Information Technology	Theory and technology of wireless communicati on network	7

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	Project Title	Principal investigators	Principal home institutions	Recommended by	Title of NSFC's project	Number of projects awarded
11	Selection and breeding of Zhonghuang 13, a general adaptable high yield and quality new variety of soybean	Wang Lianzheng, Zhao rongjuan, Wang Lan, Fu Yuqing, Hu Xianzhong, Xia Yingping, Li Qiang, Sun Junming, Chen Yingzhi, Mao Jingying, Ma Zhiqiang, Liao Qin, Xie Hui, Qu Huiying, Shi Jingcai	Institute of Crop Science, Chinese Academy of Agricultural Sciences	Ministry of Agriculture	Resistive breeding and bio technology of soybean	3