PART VI

Completion and Evaluation of NSFC Projects

6.1 Completion of General Program Projects

Table 6-1

Projects completed				**5,713**
Achievements	**Papers and publications**	**Invited speakers**	International conferences	11,167
			Domestic conferences	8,900
		Papers and books	International journals	22,447
			Domestic journals	36,180
			Books	3,271
	Research results		Evaluated	241
			Patents	1,475
			Results disseminated	435
	Awards		International awards	95
			National awards	585
			Ministerial or provincial awards	73
Talents fostered			Post-doc	1,312
			Ph.D.	16,158
			Masters	29,040

6.2 Completion of Young Scientists Fund Projects

Table 6-2

Projects completed				**1,602**
Achievements	**Papers and publications**	**Invited speakers**	International conferences	2,645
			Domestic conferences	1,750
		Papers and books	International journals	5,097
			Domestic journals	7,030
			Books	978
	Research results		Evaluated	28
			Patents	277
			Results disseminated	44
	Awards		International awards	22
			National awards	131
			Ministerial or provincial awards	31
Talents fostered			Post-doc	215
			Ph.D.	2,296
			Masters	4,723

6.3 Completion of Projects of the Fund for Less Developed Regions

Table 6-3

Projects completed				**279**
Achievements	**Papers and publications**	**Invited speakers**	International conferences	250
			Domestic conferences	309
		Papers and books	International journals	644
			Domestic journals	2,110
			Books	184
	Research results		Evaluated	18
			Patents	33
			Results disseminated	5
	Awards		International awards	0
			National awards	34
			Ministerial or provincial awards	3
Talents fostered			Post-doc	14
			Ph.D.	263
			Masters	1,725

6.4 Completion of Key Program Projects

Table 6-4

Projects completed				**239**
Achievements	**Papers and publications**	**Invited speakers**	International conferences	2,361
			Domestic conferences	1,767
		Papers and books	International journals	6,936
			Domestic journals	5,919
			Books	324
	Research results		Evaluated	21
			Patents	376
			Results disseminated	59
	Awards		International awards	34
			National awards	119
			Ministerial or provincial awards	23
Talents fostered			Post-doc	367
			Ph.D.	3,591
			Masters	3,408

6.5 Completion of Major Program Projects

In 2008, four Major Program projects were completed and evaluated.

The project entitled Research on controlled synthesis and functional properties of molecular solid materials used short bridging ligand to connect Mn (III) unit along magnetizing direction and obtained two single chain magnets. It developed new way of constructing new molecular weak ferrous-magnets from asymmetric "three atom single bridging"; used various theoretical methods to study one dimensional quantum magnetic system, and gave reasonable explanations of relevant magnetic behaviors; developed various types of flores-cent molecular solid materials, and made some applica-tions on bio imaging; designed and synthesized a series of multi switching function organic ligand with special photoelectric active properties, constructed a series of molecular basic logic operation units; and design and synthesized new types of rare earth and polymer com-posite materials, which have potential use in optical wave guided amplifications.

The project entitled Research on multi scale condensed polymers focused on multi scale problems ranging from single molecular design to material processing, through interdisciplinary studies including polymer science, con-densed matter physics, material science and computer science, in multi scale theoretical research, established coarse particle model, and using molecular simulation method based on particles, made computations on the rise and fall and association within the chain. In continu-ous studying from microscopic to mesoscopic and mac-roscopic and from small scale to large scale, it realized the connection between molecular dynamic simulation

at microscopic scale to grid Bohr Raman method at mesoscopic scale, developed mesoscopic simulation software for studying polymer fluid system, developed constitutive equation at molecular level, and established new evolutional variable constitutive equations for describing rheological behavior of entanglement system composed by linear chains. In continuous studying from macroscopic to mesoscopic and microscopic and from large scale to small scale, it realized multi scale simulation methods connecting finite element, dissipation particle dynamics, molecular dynamics of macroscopic to mesoscopic to microscopic levels, reveled internal relationship between different scale structures and the laws of response to external field. In the research on experimental platform for multi components, separate phase elastic bodies and polyolefin blends, it studied the association and dynamics of dual phase change, liquid to liquid phase separation and crystal change, and made explorations on multi scale self similar growth of polymers and the relationship between oscillating shear and separating phase dynamics.

The project entitled Studies on regulation network of genetic expression described inter-MAR association and the relationship between ACH and genetic expression; in the research on estrogen acceptor, it described the features of "dual orientation" and "two dimension" in gene transcription and regulation of estrogen acceptor media; discovered a inhibitory complex composed of GATA-1, Oct-1 and other proteins in Y-initiator 疮175 and 疮173, and studied its expression regulating network at various levels; discovered regulations of ACAT genetic expression in transcription, splicing and translation levels, revealed relevant functions and molecular mechanism. It discovered that histone acetylation was the key factor in the "position signal" of root hair cell differentiation of mediated plants. Its research results provide new ideas for solving the problem of regulating the "pattern gene" expression by the cortex position.

The project entitled Studies on single molecular behavior in life sciences set up and developed a platform for single molecular research in life sciences, realized detection of single bio molecule distribution, shift, transport and signal transfer with different structural properties such as adrenoceptor in living cells, integrated single molecular techniques such as atomic force microscope, total reflex florescent microscope and near field optical measurement, smf obtained innovative results in quantitative studies on single bimolecular dynamic behaviors such as adrenoceptor in living cells, VEGF, Mac-1, etc. and molecular mechanism of Endostatin in alleviating tumor growth and error folding re-accumulation to form fibers, etc.

Evaluation of Major Program Projects in the Tenth Five-Year Plan Period in 2008

Table 6-5

Project title	Funding	Papers and books			Awards			Patents	Results disseminated	Talents fostered		
		International journals	Domestic journals	Books	National	Ministerial or provincial	International			Post-doc	Ph.D.	Masters
Research on controlled synthesis and functional properties of molecular solid materials	800	481	40	4	1	5		14		7	78	52
Research on multi scale condensed polymers	800	196	33	4	1	5		2	1	3	65	47.
Studies on regulation network of genetic expression	600	55	5					6			27	6
Studies on single molecular behavior in life sciences	800	39	6	2				1		7	16	9

6.6 NSFC's Support to the Winners of the National Natural Science Award

Prof. Wang Zongcheng and Xu Guangxian, winners of the top prize of the National Science and Technology Award in 2008 and Members of the Chinese Academy of Sciences, all received funding from NSFC. Xu Guangxian was the director of NSFC Department of Chemical Sciences in the first and second terms.

In 2008, the first class prize of the National Natural Science Award was vacant and 34 projects were given the second-class prizes. All the winners obtained funding from NSFC to some extent.

Second Class Prizes of the National Natural Science Award

Table 6-6

	Project title	Principal investigators	Recommended by	Titles of NSFC projects	Number of grants
1	Theory, method and application of uniform experimental design	Wang Yuan, Fang Kaitai	Chinese Academy of Sciences	Generalized multi element analysis and its applications	3
2	Artificial boundary element methods and numerical solutions of partial differential equations	Yu Dehao, Han Houde	Chinese Academy of Sciences	Artificial element methods — numerical solution of developmental equations on boundless region	7
3	Theoretical studies on multi field coupling nonlinear mechanical behaviors of electromagnetic material structures	Zheng Xiaojing, Zhou Youhe	Ministry of Education	Nonlinear bend and magnetic elastic stability of electromagnetic structures	11
4	Studies on microscopic elasticity and fracture of solid	Wei yuguang, Wang Ziqiang, Chen Shaohua	Chinese Academy of Sciences	Plastic strain spinning theory and related mechanical problems	10
5	Studies on chemical evolution of the Galaxy through star abundance	Zhao Gang, Chen Yuqin, Zhang Huawei, Shi Jianrong, Liang Yanchun	Chinese Academy of Sciences	Studies on chemical evolution of the Galaxy through spectral analysis of different star abundances	41
6	Studies on quantum open system and its application in quantum information	Sun Changpu, Quan Haitao	Chinese Academy of Sciences	Theoretical studies on the integration and relevant controls of quantum bit	9
7	STM studies on atomic and molecular control, assembly and properties	Gao Hongjun, Song Yanlin, Shi Dongxia, Zhang Deqing, Pang Shijin	Chinese Academy of Sciences	Basic research on atomic control	46
8	Structural and dynamic studies on transition state of chemical reactions	Yang Xueming, Dai Dongxu, Wang Xiuyan, Ren Zefeng, Qiu Minghui	Liaoning Province, Chinese Academy of Sciences	Molecular dynamics	16
9	Studies on the synthesis, structure and properties of functional nano materials and explorations on their applications	Li Yadong, Wang Xun, Peng Qing, Sun Xiaoming, Li Xiaolin	Beijing Municipality	Mechanism of preparation, formation of inorganic nano tubes, stick and cage and their structures and properties	15

Table 6-6

	Project title	Principal investigators	Recommended by	Titles of NSFC projects	Number of grants
10	Synthesis, structure and reaction of carborane and metallic carborane	Xie Zuowei	Hong Kong Special Administrative Region	Organic chemistry	1
11	Molecular engineering of new regular nano porous materials	Qiu Shilun, Zhu Guangshan, Li Xiaotian, Zhang Zongtao, Fang Qianrong	Ministry of Education	Design and synthesis of metallic organic rigid frame micro porous crystal materials	13
12	History and changes of east Asian monsoon climate since late Miocene	An Zhisheng, Zhou Weijian, Liu Xiaodong, Liu Weiguo, Liu Yu	Chinese Academy of Sciences	Accumulation of wind dusts in North China in Late Cenozoic and evolution of east Asian monsoons	42
13	Global stratotype section and point position (golden spike) and classification of chronostratigraphic division in Cambrian and Ordovician	Peng Shanchi, Chen Xu, Wu Jiayu, Lin Huanling, Zhang Yuandong	Jiangsu Province	Life process in slope environment in the middle-upper Cambrian and its significance in the classification of global stratotype sections	25
14	Biogeological studies on life and environment coordinated evolutions	Yin Hongfu, Xie Shucheng, Yang Fengqing, Tong Jinnan, Wang Yongbiao	Ministry of Education	Life environment process around the turn of Paleozoic and Mesozoic and its insight on modern times	26
15	Studies on the laws of greenhouse gas (CH_4 and N_2O) emission in Chinese wetland ecosystems	Cai Zhucong, Xing Guangxi, Xu Hua, Yan Xiaoyuan, Ding Weixin	Chinese Academy of Sciences	Studies on the laws of spatial variation of methane exhaust flux in rice field	25
16	Studies on the quaternary glaciations of China and environmental changes	Shi Yafeng, Cui Zhijiu, Li Jijun, Zheng Benxing, Zhou Shangzhe	Chinese Academy of Sciences	Studies on natural environmental evolution in the north of Qinghai Tibet Plateau in late quaternary period	24
17	Research on the molecular basic of maturity of sperm in accessory testis	Zhang Yonglian, Chen Xiaozhang, Liu Qiang, Hu Yuanxin, Li Peng	Shanghai Municipality	Studies on the molecular mechanism of sperm generation and maturity	10
18	Studies on Chinese bryophytes	Gao Qian Cao Tong, Li Xingjiang, Wu Yuhuan, Zhang Guangchu	Chinese Academy of Sciences	Studies on genetic diversity of Chinese and east Asian endemic genera bryophytes	12
19	Basic research on metabolic engineering of antibiotics	Deng Zixin, Bai Linquan, Zhou Xiufen, Sun Yuhui, Chen Shi	Shanghai Municipality	Chemical biology of synthesis and innovation of important antibiotics	24

Table 6-6

	Project title	Principal investigators	Recommended by	Titles of NSFC projects	Number of grants
20	Studies on molecular mechanism of regulatory secretion related to blood glucose regulations	Xu Tao, Xu Pingyong, Chen Liangyi, Wu Zhengxing, Qu Anlian	Chinese Academy of Sciences	Studies on molecular mechanism of regulating insulin secretion by protein kinas	25
21	Mechanism of carbon, nitrogen and water evolution in ecosysyem recovery and succession process in south China tropical and subtropical forest	Zhou Guoyi, Yan Junhua, Zhang Deqiang, Mo Jiangming, Tang Xuli	Guangdong Province	Comparison studies on C carrying quantity and part of underground C density in hydrological process of different recovery forest ecosystems	11
22	Molecular mechanism of estrogen and tamoxifen inducing gynecological tumors	Shang Yongfeng, Zhang Hua, Wu Huijian, Yin Na, Yi Xia	Chinese Medical Society	Molecular biology of tumor genesis and development and genetic basis of expression	9
23	Studies on ubiquitin regulation mechanism of tumor cells	Zhang Xuemin, Li Ailing, Shen Beifen, Li Huiyan, Zhou Tao	General Logistics Department of the PLA	Studies on great difference mechanism of impact of cutting ubiquitin path on normal and tumor cells	10
24	Natural immunological identification of mediated liver damage and regeneration and its regulation mechanism	Tian Zhigang, Wei Haiming, Sun Na, Zhang Jian, Zheng Xiaodong	Anhui Province	Identification and activation of humane liver NK cells and immune escape of liver tumor cells	21
25	Parametric methods for the design of robust control systems and its application	Duan Guangren, Guan Xinping, Liu Guoping, Zhang Huanshui, Gao Huijun	Heilongjiang Province	Theory of robust control based on optimization and its application	13
26	Cracking of internationally used Hash function	Wang Xiaoyun, Yu Hongbo	Ministry of Education	Analysis and design of Hash function and group coding	4
27	Theory and design of calm control of complex nonlinear systems	Cheng Daizhan, Hong Yiguang, Xi Zairong, Wang Yuzhen	Chinese Academy of Sciences	Analysis and integration of the first class complex nonlinear systems	16
28	Formalized model and logic basis of non classical computations	Ying Mingsheng	Ministry of Education	Formalized methods for stochastic process	10
29	Theory and applications of chaotic reverse control and generalized Lorenz system groups	Chen Guanrong Lu Jinhu, Zhou Tianshou, Lu Jun'an	Hong Kong Special Administrative Region	Control and synchronization of complex power network of several typical coupling structures	5
30	Studies on non-equilibrium crystal interface dynamics and brittle fracture on crystal interface	Xu Tingdong	Expert recommendation	Studies on non equilibrium crystal interface dynamics and brittle fracture on crystal interface	5

Table 6-6

	Project title	Principal investigators	Recommended by	Titles of NSFC projects	Number of grants
31	Basis of controlled growth, processing, assembly and devices of carbon nano tubes used in nano electronic materials	Liu Zhongfan, Zhang Jin, Zhu Tao, Wu Zhongyun	Ministry of Education	Surface nano engineering	25
32	Nonlinear control of large power systems	Lu Qiang, Mei Shengwei, Sun Yuanzhang, Liu Feng	Ministry of Education	Algebraic and geometric methods of nonlinear robust control of power systems and its application	9
33	Structural features of coal and its relationship with reaction and modification	Xie Kechang, Li Wenying, Feng Jie, Wang Baojun, Lu Jianjun	Ministry of Education	Large molecular structure of micro components of coal rock and its relationship with reaction properties	11
34	Theoretical studies on the applications of coating formation mechanism, structure and properties of thermo spray coating	Li Changjiu, Wang Weize, Li Jinglong, Li Wenya, Wang Yuyue	Shaanxi Province	Studies on the formation mechanism of liquid thermal spray nano structure oxide ceramic coating	13