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Bioenvironmental Engineering Program
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EDUCATION

Ph.D. in Biological and Agricultural Engineering, 1993
College of Engineering, China Agricultural University, Beijing, China

B.S. in Agricultural Engineering, 1988
Department of Mechanical Engineering, Shandong University of Technology, Shandong, China

RESEARCH INTERESTS

- Bioprocess engineering;
- Biological and thermal conversion of biomass for chemical and energy uses;
- Environmental impact assessment and economic analysis of bio-based product production;
- Agricultural waste management and conversion;
- Biosensor for bioprocess, food safety and biosecurity application;
- Innovative postharvest and food processing technology.

PROFESSIONAL EXPERIENCE

Bioenvironmental Engineering Program, **North Carolina A&T State University, Greensboro, NC.**
Research Scientist and Instructor, January, 2003 to present

Research Area: Succinic acid production from biomass derived sugars using *Actinobacillus succinoneges*, bioconversion of crop residues for fuels and chemicals production, economic analysis and environmental impact assessment of bio-based products production, lactic acid production from cheese whey using *Bifidobacteria longum*, liquefaction of crop residue to biopolymers, separation and purification of lactic acid from fermentation broth using membrane system, fractionation of softwood using steam treatment, development of cofiring technology for hydrogen production from coal and biomass, biological hydrogen production from food waste, anaerobic digestion of animal manure for methane production, composting of bedding material of piglet house, and installation and evaluation of grid connected photovoltaic system.

Department of Biosystems and Agricultural Engineering, **University of Minnesota, St. Paul, MN,**
Visiting Associate Professor, January 2000 to December 2002

Research Area: Pretreatment of corn stover for ethanol production, development of automatic milk standards packaging system, deoxynivalenol measurement using NIR and neural network, degradation of pesticide residue in vegetable and fruit using ozonated water, and development of millisecond pasteurization system for food and pharmaceutical application.

Drying Research Center, **Texas A&M University, College Station, TX**
Visiting Scientist, March 1997-April 1998

Research Area: Heat and mass transfer in food processing, and impingement steam drying of tortilla chips.

Feed Research Institute, **Chinese Academy of Agricultural Sciences**, Beijing, China.

Associate Professor and research leader, March 1996 to December 2002

Research Area: Conversion of agricultural residue to biofuels and biomaterials, development of impinging stream dryer, separation of fibers and proteins of DDGS, development of vacuum coating system, study of stress caused fissure of material during drying, and drying mechanism and drying quality;.

Institute of Engineering Thermophysics, **Chinese Academy of Sciences**, Beijing, China,

Post-doctoral Research Associate, September 1993 to March 1996

Research Area: Heat and mass transfer in biological material, heat and mass transfer during impinging stream drying, fluidized bed combustion and drying, and numerical analysis of heat and mass transfer.

College of Engineering, **China Agricultural University**, Beijing, China,

Research Assistant – September 1988 to August 1993

Research Area: Heat and mass transfer in biological materials, design of recirculation grain dryer, modeling and simulation of drying process.

PROFESSIONAL AFFILIATIONS

- American Society of Agricultural Biological Engineers (ASABE), Member, 2003-
Biological Engineering Division (BE), ASABE, vice chair 2005-2006
2006 ASABE Annual meeting, program chair of BE Division
Biological Engineering Division, ASABE, elected chair, 2006-2007
- American Institute of Chemical Engineers, Member, 2005-
- Institute of Biological Engineering (IBE), member, 2005-
- Chinese Society of Agricultural Engineers (CSAE), Senior Member, 1999-
Chinese Society of Agricultural Engineers (CSAE), board Member, 1999-2003
Food and Processing Engineering Division, CSAE, vice Chair, 1999-2003
- Chinese Society of Agricultural Machinery, senior member, 1998-

HONORS AND AWARDS

- Honorable Mention Paper Award of American Society of Agricultural Biological Engineers (ASABE), 2005
- First Place Award of presentation competition, Association of Extension Administrators (AEA) and Association of Research Directors (ARD) meeting, New Orleans, LO, 2005.
- Superior paper award of Chinese Society of Agricultural Engineering, 1996-1999
- Superior paper award of Chinese Feed Industry Association, 1998
- Superior paper award of Chinese Society of Agricultural Engineering, 1986-1995
- Second Prize of excellent paper award of Chinese Academy of Agricultural Sciences, 1999.
- Third prize of excellent paper award of Institute of Engineering Thermophysics, Chinese Academy of Sciences, 1993.
- Biographical profile inclusion in the 8th edition of Who's Who in Science and Engineering and Who's Who in the World.

PATENTS

- **Li, Y.** “Cyclone Impinging stream dryer”, approved on 06/03/2000. China Patent ZL 992053730
- **Li, Y., J. Li.** “Air flow cooling device capable of preventing material from absorption of moisture during cooling”, approved on 12/19/2001. China Patent ZL 992552575.
- **J. Li, Y. Li, Q. Yu.** “Device for Capping of Special Vials”. 10/30/2002. China Patent 01268344.2

HISTORY OF REVIEWSHIP

- Transaction. of the ASAE,
- Applied Engineering in Agriculture,
- Applied Biochemistry and Biotechnology.

CURRENT TEACHING

- Bioprocess engineering (new course for 2006)
- Engineering properties of biological materials (AGEN 440, fall 2005)
- Engineering design and system analysis (AGEN 330, spring 2004 and 2005)

PUBLICATIONS

Peer Reviewed Journal Articles (31)

1. **Li, Y., A. Shahbazi.** 2005. Lactic acid separation and purification from cheese whey fermentation broth using membrane system. *Applied Biochemistry and Biotechnology* (submitted on May 1, 2005).
2. Liang, L., Z. Mao, **Y. Li.** 2005. Liquefaction of agricultural residues to biopolyols at atmospheric pressure and low temperature. *Applied Biochemistry and Biotechnology* (submitted on May, 1, 2005).
3. A. Shahbazi, **Li. Y.** 2005. Availability of crop residues as a sustainable feedstock for bioethanol production in North Carolina. *Applied Biochemistry and Biotechnology* (Accepted on august 14, 2005).
4. **Li Y., A. Shahbazi., C. T. Kadzere.** 2005. Separation of cells and proteins from fermentation broth using ultrafiltration. *Journal of Food Engineering.* (in press, available online July 6, 2005).
5. Shahbazi, A., **Y. Li,** and M Mims. 2005. Application of impregnation and rapid steam treatment to the fractionation of softwood. *Applied Biochemistry and Biotechnology* 121-124:973-988.
6. Shahbazi, A. M., Mims, **Y. Li,** S.A. Ibrahim, S. Vest, and A. Morris. 2005. Lactic acid production from cheese whey by immobilized bacteria. *Applied Biochemistry and Biotechnology* 121-124:529-540.
7. Shahbazi, A., H. Singh, C. Turner, **Y. Li,** S. Fitzpatrick. 2005. Performance evaluation and economic analysis of a grid connected photovoltaic system in multifamily residential building, *Applied Engineering in Agriculture* 21(4):729-735.
8. **Li, Y., R. R. Ruan, J. Li, et al.** 2005. Development of an automatic milk standards packaging system. *Applied Engineering in Agriculture* 21(2):253-257.
9. **Li, Y., R.R Ruan, P.L. Chen, X. J. Pan and Z. Liu.** 2004. Enzymatic saccharification of corn stover pretreated by combined diluted alkaline and homogenization. *Transactions of the ASAE* 47(3): 821-825. (2005 ASABE Honorable Mention Paper Award.)

10. **Li, Y.**, J. Li, Z. Liu, R. R Ruan and Z. H. Mao. 2003. Vacuum coating of heat sensitive liquid ingredient into feed pellets. *Transactions of the ASAE* 46(2): 383-387.
11. Ruan, R. R., **Y. Li**, X. Y. Lin and P. L. Chen. 2002 Non-destructive determination of deoxynivalenol (DON) levels using near-infrared spectroscopy: neural network calibration. *Applied Engineering in Agriculture* 18(5): 549-553.
12. **Li, Y. B.**, C. Cao, Q. Yu, and Q Zhong. 1999. Study on rice fissuring during intermittent drying. *Drying Technology* 17(9): 1779-1793.
13. **Li, Y. B.**, J. Seyed-Yagoobi and R.G. Moreira, 1999. Superheated steam impingement drying of tortilla chips, *Drying Technology* 17(1-2):191-213.
14. **Li, Y. B.**, C. Cao., and D. Liu. 1997. Simulation of recirculating circular grain dryer with tempering stage. *Drying Technology* 15(1): 201-214.
15. J. Li., **Y. Li** and Z. Mao. 2000. Liquid addition in feed processing. *Industry of Grain and Feed*, 2000(9):18-20. (in Chinese)
16. B. Liu, **Y. Li** and Z. Mao. 2000. Study on mass transfer and cracking mechanism in a rice grain during moisture adsorption. *Trans. of the Chinese Society of Agricultural Engineering* 16(1):117-121. (in Chinese)
17. **Li, Y.** J. Li. 1999. Review on the development of innovative feed processing technology. Special Issue on Progress in Agricultural Engineering. *Trans. of the Chinese Society of Agricultural Engineering* 16: 173-177. (in Chinese)
18. **Li, Y.**, J. Seyed-Yagoobi. 1998. Superheated steam Impingement drying of food. *Trans. of the Chinese Society of Agricultural Machinery* 30 (6): 73-77. (in Chinese)
19. Jia, C, C. Cao, **Y Li**, and D. Liu. 1997. Development and application of two-dimensional heat and mass transfer and stresses analysis - finite element simulation software. *Journal of Zhejiang University of Technology* 25 (1): 1-6. (in Chinese)
20. **Li, Y.**, C. Cao and J. Yang. 1997. Numerical and experimental study on the rough rice tempering. *Trans. of the Chinese Society of Agricultural Machinery* 28 (Supp.). 51-54. (in Chinese)
21. **Li, Y.**, and D. Liu. 1996. Heat and mass transfer in slab shaped potato. *Trans. of Chinese Society of Engineering Thermophysics* 17(supp.):73-76. (in Chinese)
22. **Li, Y.**, Q. Yu, and L. Zhao. 1996. Experimental study on the heat and mass transfer in potato during drying. *Trans. of the Chinese Society of Agricultural Engineering* 12(3): 62-65. (in Chinese)
23. **Li, Y.**, Y.Qin. and Y. Li 1996. Numerical study on the heat and mass transfer in potato during drying. *Trans. of the Chinese Society of Agricultural Engineering* 12(4):52-55. **(1996-2000 Superior Paper Award of Chinese Society for Agricultural Engineering.)** (in Chinese)
24. **Li, Y.**, and D. Liu. 1996. Heat and mass transfer in potato during drying. *Trans. of the Chinese Society of Agricultural Machinery* 27(1): 52-56. (in Chinese)
25. Jia C., **Y. Li**. 1996. Mathematical simulation of the moisture distribution in a corn kernel during tempering. *Trans. of the Chinese Society of Agricultural Engineering* 12(1):147-151. (in Chinese)
26. **Li, Y.** and C. Cao. 1994. Simulation study on recirculating circular grain dryer. *Trans. of the Chinese Society of Agricultural Machinery* 25(4):31-37. (in Chinese)
27. **Li, Y.** and C. Cao. 1994. Simulation study of intermittent drying of rough Rice. *Trans. of the Chinese Society of Agricultural Engineering* 10(4):154-159.

28. **Li, Y.** and C. Cao. 1993. Application of moisture diffusion model to drying of individual grain kernel. *Tans. of the Chinese Society of Agricultural Engineering* 9(1):74-81. **(1991-1995 Superior Paper Award of Chinese Society for Agricultural Engineering.)** (in Chinese)
29. **Li, Y.** and Z. Liu. 1993. Dehydration of fruit and vegetable. *Machinery for Agriculture, Animal, Husbandry and Food Processing*. 1993(4):39-42. (in Chinese)
30. **Li, Y.** and C. Cao. 1993. Drying caused stresses within a rough rice kernel. *Journal of Beijing Agricultural Engineering University* 13(4):54-60. (in Chinese)
31. **Li, Y.** and C. Cao. 1993. Simulation and experimental study on rough rice drying. *J. of Shandong Institute of Technology* 7(2):4-9. (in Chinese)

Proceeding Publications (22, English)

1. **Li, Y.,** A. Shahbazi, M. Mimis and S. Coulibaly 2005. Lactic acid recovery from cheese whey fermentation broth using nanofiltration membranes, *ASAE Paper No. 056044. St. Joseph, Mich.: 2005 ASAE Annual Meeting*, Tampa, Florida, July 18-21, 2005.
2. Shahbazi A., **Li, Y.** 2005. Assessment of crop residues for bioethanol production in north carolina, *ASAE Paper No. 056044. St. Joseph, Mich.: 2005 ASAE Annual Meeting*, Tampa, Florida, July 18-21, 2005.
3. Shahbazi A., **Li, Y.,** M. Mimis and S. Coulibaly 2005. Lactic acid production from cheese whey, *1890 Joint Research and Extension Conference*, New Orleans, LO, June 19-22, 2005. **First Place Award of presentation competition of Association Research Director (ARD) and Association of Extension Administrator (AEA).**
4. **Li, Y.,** A. Shahbazi, M. Mims, and C. Kadzere, 2004. Separation of cells and proteins from fermentation broth using ultrafiltration. *ASAE Paper No. 047071. St. Joseph, Mich.: 2004 ASAE Annual Meeting*, Ottawa, Canada, August 1-4, 2004
5. Shahbazi, A., H. Singh, C. Turner, **Y. Li**, S. Fitzpatrick, C. Prince. 2004. Performance evaluation and economic analysis of a grid connected photovoltaic system in multifamily residential building, *The DOE Solar Energy Technologies Program Review Meeting*, Denver, Colorado, October, 2004
6. **Li, Y.,** R. R. Ruan, J. Li, Q. L. Yu, X. Y. Lin, P. Chen, S. Deng and B. Grouni. 2003. Design of automatic standard milk samples packaging machine. *ASAE Paper No. 036162. St. Joseph, Mich.: ASAE. 2003 ASAE Annual Meeting*, Las Vegas, Nevada, 27-30 July 2003.
7. Deng S., R.R. Ruan¹, P. Chen¹, X. Lin, F. Yu, **Y. Li**. 2003. Non-thermal plasma technology for liquid foods pasteurization. *ASAE Paper No. 036179. St. Joseph, Mich.: ASAE. 2003 ASAE Annual Meeting*, Las Vegas, Nevada, 27-30 July 2003.
8. Shahbazi, A. M. R. Mims, S. A. Ibrahim, and **Y. Li**, 2003. Performance of immobilized bifidobacteria in converting lactose to lactic acid. *ASAE Paper No. 036225. St. Joseph, Mich.: ASAE. 2003 ASAE Annual Meeting*, Las Vegas, Nevada, 27-30 July 2003.
9. Pan, X., R. Ruan, Y. Liu, H. Lei, X. Lin, **Y. Li**, P. Chen, V. Morey, T. Yang, and J. Johnson. 2002. A novel process to produce polymers from agricultural residues. *ASAE Paper No. 026131. St. Joseph, Mich.: ASAE. 2002 ASAE Annual Meeting*, Chicago, Illinois, 28-31 July 2002.
10. Run, R. R., P. L. Chen, **Y. Li**, and X. Y. Lin. 2002. NIR, Computer vision and neural network techniques for scab inspection. *Second International Conference on Grain, Flour and Bread Quality*, Moscow, Russia.

11. **Li, Y.**, R. Ruan, P. Chen, X. Lin, and H. Ma. 2001. Physical processes improved enzymatic hydrolysis of corn stover. *In Proc. of International Conference on Agricultural Science & Technology*. Beijing, China. pp. 19-22.
12. Li, J., **Y. Li**, and R. Ruan. 2001. Vacuum infusion of liquid ingredient into feed pellets. *In Proc. of International Conference on Agricultural Science & Technology*. Beijing, China. pp. 47-51.
13. Ruan, R., K. Ning, P. Chen, M. Zhang, X. Lin, and **Y. Li**. 2001. A machine vision system for objective quality inspection of dry beans. *In Proc. of International Conference on Agricultural Science & Technology*. Beijing, China. pp 1-4.
14. Ye, X., R. Ruan, P. Chen, and **Y. Li**. 2001. A fast magnetic resonance imaging based method for determination of convective heat transfer coefficient in ohmically heated food system. *In Proc. of International Conference on Agricultural Science & Technology*. Beijing, China. pp 12-18.
15. Ma, H., P. Chen, **Y. Li**, X. Lin, and R. Ruan. 2001. Treatment of H₂S and NH₃ using ozone and silent discharge plasma. *In Proc. of International Conference on Agricultural Science & Technology*. Beijing, China. pp. 90-96.
16. **Li, Y.**, J. Li, R. R. Ruan, and Z. Liu. 2001. Vacuum coating of heat sensitive liquid ingredient to feed pellets. *ASAE Paper No. 016008. St. Joseph, Mich.: ASAE. 2001 ASAE Annual Meeting*, Sacramento, Calif., 30 July-1 August.
17. **Li, Y.**, R. R. Ruan, and P. L. Chen. 2001. Effect of physical treatments on the enzymatic hydrolysis of corn stover. *ASAE Paper No. 016155. St. Joseph, Mich.: ASAE. 2001 ASAE Annual Meeting*, Sacramento, Calif., 30 July-1 August.
18. Ma, H., P. Chen, R. Ruan, **Y. Li**. 2001. H₂S and NH₃ removal by silent discharge plasma and ozone systems. *ASAE Paper No. 014072. St. Joseph, Mich.: ASAE. 2001 ASAE Annual Meeting*, Sacramento, Calif., 30 July-1 August.
19. **Li, Y.**, C. Cao, J Li. 1998. Study on Rice Fissuring during Intermittent Drying. *Proceeding of 7th International Working Conference on Stored-product Protection*. Beijing, China. Page1660-1664.
20. **Li, Y.**, D. Liu, Y. Bai and Y. Qin. 1996. Heat and mass transfer during potato drying, *In 10th International Drying Symposium (IDS'96)*, Poland. Page 929-936 .
21. **Li, Y.** and C. Cao. 1994. Simulation and experimental study on the recirculating grain dryer. *In 9th International Drying Symposium (IDS'94)*, Australia. Page 801-808.
22. **Li, Y.** and C. Cao. 1995. Experimental study on the intermittent drying of grain. *In International Symposium on Agricultural Mechanization*. Beijing, China. Page 280-286.

Recent Conference Presentation (13, English)

1. **Li, Y.**, A. Shahbazi, and S. Coulibaly 2005. Separation of lactic acid from cheese whey fermentation broth using cross-flow ultrafiltration and nanofiltration membrane system. 2005 AICHE Annual Meeting, Cincinnati, OH.
2. Liang, L., Z. Mao, **Y. Li**. 2005. Liquefaction of agricultural residues to biopolyols at atmospheric pressure and low temperature. *The 27th Symposium on Biotechnology for Fuels and Chemicals Denver, Colorado, May 1-4, 2005*.
3. Shahbazi A **Y. Li**, 2005 Availability of Crop Residues as a Sustainable Feedstock for Bioethanol Production in North Carolina. *The 27th Symposium on Biotechnology for Fuels and Chemicals Denver, Colorado, May 1-4, 2005*.

4. **Li, Y.,** A. Shahbazi. 2005. Lactic acid separation and purification from cheese whey fermentation broth using membrane system. *The 27th Symposium on Biotechnology for Fuels and Chemicals Denver, Colorado, May 1-4, 2005.*
5. **Li, Y.,** A. Shahbazi, A. Morris, and M. Mims. 2004. Hydrogen production from starch by mixed culture of *Clostridium butyricum* and *Enterobacter aerogens*. *ASAE Paper No. 047073. St. Joseph, Mich.:2004 ASAE Annual Meeting, Ottawa, Canada, August 1-4, 2004*
6. Shahbazi A. , **Y. Li,** V. Shirley, and S. A. Ibrahim. 2004. Lactic acid production from cheese whey by immobilized bifidobacteria. *The 26th Symposium on Biotechnology for Fuels and Chemicals Chattanooga, Tennessee, May 9-12, 2004.*
7. Shahbazi A., **Y. Li,** and E. Chornet. Application of impregnation and rapid steam treatment to the fractionation of softwood. *The 26th Symposium on Biotechnology for Fuels and Chemicals Chattanooga, Tennessee, May 9-12, 2004.*
8. Liu Z., R. R. Ruan, S. Deng, F. Yu, **Y. Li,** X Lin, and P. Chen. 2004. Impact of ozonation on the pesticide residues degradation and shelf life of fruits. 2004 IFT Annual Meeting, July 13-16.
9. Liu Z., R. R. Ruan, **Y. Li,** P. Chen. Removal of pesticides residue in fruits and vegetables with ozonated water washing. *ASAE Paper No. 036115. St. Joseph, Mich.: ASAE. 2003 ASAE Annual Meeting, Las Vegas, Nevada, 27-30 July 2003.*
10. **Li, Y.,** R. R. Ruan, J. Li, Q. L Yu, X. Y. Lin, P. Chen, S. Deng and B. Grouni. 2003. Development of an automatic milk standards packaging system. *12th World Food Congress, Chicago, Illinois, July 16-20.*
11. Liu Z., R. Ruan, **Y. Li,** P. Chen, and T. Krick. Ozone treatment to reduce or remove pesticides in fruits and vegetables. 2003 IFT Annual Meeting, Chicago, Illinois, July 12-16.
12. Ruan, R., **Y. Li,** X. Lin, and P. Chen. 2001. Development of neural network model to predicate deoxynivalenol (DON) levels by near-infrared spectroscopy. *In Proc. of Second International Wheat Quality Conference. Manhattan, Kans.*
13. **Li Y.,** R.Yamsaengsung, R.G. Moreira, J. Seyed-Yagoobi. 1998. Superheated steam impingement drying of tortilla Chips. *Annual IFT meeting (72B-15), Atlanta, GA.*

RESEARCH GRANTS

Current Projects:

- Shahbazi, A., **Y. Li (co-PI).** Multidisciplinary, multi-campus,internet- based course development: bioprocess engineering. *USDA CSREES, Capacity Building, \$299,997. 10/1/2005-9/30/2008.*
- Shahbazi, A., **Y. Li (co-PI),** S. A. Ibrahim, V. Shirley. Biological conversion of biomass to fuels and chemicals. *USDA-CSRS- Evans-Allen, \$602,590. 10/1/2005-9/30/2008.*
- Seo C. W., H. Yang, S. A. Ibrahim, **Y. Li (co-PI).** Development of granular activated carbon for wastewater treatment using North Carolina agricultural by-products. *USDA-CSRS- Evans-Allen, \$478,070. 10/1/2005-9/30/2008.*
- Shahbazi, A., **Y. Li (co-PI).** Composting of swine bedding material, *USDA-CSRS- Evans-Allen, \$20,000. 10/1/2004-9/30/2005*

Pending Projects:

- Shahbazi, A., **Y. Li (co-PI)**. Co-gasification of coal and waste biomass in batch processing downdraft gasifier and continuous fluid bed reactor . *U.S. Department of Energy*, \$200,000. 10/1/2005-9/30/2008.
- Shahbazi, A. **Y. Li (co-PI)**. Atmospheric pressure low temperature biomass liquefaction and biorefining model. *DOE for Education Institution*, Joint with the University of Minnesota, Funds to NCAT \$150,000, 06/06-12/07.
- Shahbazi, A. K.A. Schimmel, **Y. Li (co-PI)**. Study of heterogeneous reaction of cellulose for bioenergy production from biomass. *NSF for Research Center*, Joint with University of Florida, Funds to NCAT, \$495, 765, 01/2005-12/2009.

Completed Projects:

- **Li, Y (PI)**. Conversion of agricultural byproducts to biopolymer and dietary fibers, *Ministry of Agriculture of China (MOA)*, CNY 530,000, 2000-2002.
- **Li, Y. (PI)**. Development of liquid vacuum coating system for feed pellets. *Ministry of Science and Technology of China*, CNY 40,000, 01/1999-12/2000.
- **Li, Y. (PI)**. Study on the cracking of grain using NMR. *National Natural Science Foundation of China(NSFC)*, CNY 30,000, 01/1999-12/2000.
- **Li, Y. (PI)**. Heat and mass transfer during food processing. *Ministry of Human Resource of China*, Outstanding Young Scientist Fund, CNY 20,000. 01/1999-12/2000.
- **Li, Y. (PI)** Study on the mechanism of superheated steam drying. *Ministry of Education of China*, Research Funds for Outstanding Scientist. CNY 20,000. 01/1999-12/2000.
- Qin Y. **Y. Li (co-PI)**. Separation of proteins and fibers in DDGS. *Ministry of Science and Technology of China*, CNY 50,000, 09/96-12/98.
- **Li, Y. (PI)** Development of impinging stream dryer. *Ministry of Science and Technology of China*, CNY 120,000, 09/96-12/98.
- **Li, Y. (PI)**. Shrinking and cracking mechanism of material during drying. *National Natural Science Foundation of China (NSFC)*. CNY 120,000, 01/97-12/1999.
- **Li, Y. (PI)**. Study of drying mechanism and drying quality of agricultural materials. *President Funds of Chinese Academy of Sciences*, CNY 40,000, 01/1997-12/1999.
- Liu, D. **Y. Li (co-PI)**. Study of the heat and mass transfer and flow dynamics of impinging stream dryer. *National Natural Science Foundation of China (NSFC)*, CNY 90,000, 01/1996-12/1998.
- **Li, Y (PI)**. Heat and mass transfer during drying of agricultural materials. *National Natural Science Foundation of China (NSFC)*, CNY 60,000, 01/94-12/96.