

Application to faculty position in Physics

The purpose of this letter is to express my interest in opening tenure-track assistant professor positions at your school.

My qualifications and experiences for the faculty position in Physics are as followings:

- A PH.D Degree in Applied Physics from University of Texas at Arlington.
- A Master's Degree in mathematics from Louisiana Tech University.
- A Master's Degree in Physics (Astronomy, research in binary stars and kitt peak national observatory experience) from Florida International University.
- A B.S in Space Physics (project in upper atmospheric science) from University of Science and technology of China.
- Postdoc experience in computational electromagnetic field propagating in biological media.
- Over two years full-time teaching experiments at Elizabeth City State University as a visiting assistant professor of Physics (since August 2002). Teaching Physics and Technology courses and involving in "Remote Sensing" educational project. **Teaching evaluation from students: 4.5/5.0**
- ECSU working experience also includes involving in and supervising undergraduate students' research (mentor of Physics group), developing curriculums, recruiting Physics major/minor students, involving in university and community's activities such as "open house, middle school science fare", etc.
- Involving in writing proposal "Polar Ice Science and Technology Center" and "INTERACTIVE MAPS OF PHYSICS APPLICATIONS AND CONCEPTS FOR TEACHING (IMPACT) AND LEARNING", etc.
- Interest in and experience in teaching interactive Physics.
- "Evidence for droplet reorientation and interfacial charges in a polymer-dispersed liquid crystal cell", S. C. Sharma, L. Zhang, A.J. Tapiawala, and P. C. Jain, Physical Review Letters **87**, 105501 (2001).
- Five and half a year full-time teaching experience in China.
- Six years half-time lab teaching experience in Physics, Math (including the computer lab) and Astronomy.
- Two years full-time States' industrial Engineer and Scientist (project manager) experience in Lasers/ Optical communications /Photonics/Micro-electrons/Mems and EO materials.
- One pending US patent "3-D Optical Switches".
- Elected President of Graduate Student Council of University of Texas at Arlington and a Committee member of The University of Texas System Student Advisory Council from 1999 – 2000.
- Up-to-date knowledge of computers – Windows environment, use and programming of standard office programs such as Microsoft Word, Excel and PowerPoint. I experience in programming in Mathematica 4.0, Matlab, Fortran, Visual Basic 6.0 and C.

I have enclosed a resume (vita) and three copies of recommendation letter.

Sincerely yours,


Lei Zhang

Lei Zhang, Ph.D.

Visiting Assistant Professor of Physics

Appointed 2002

Email: zhanglei90@hotmail.com, or lei_zhang20002@yahoo.com, **Tel (h): 252-3312208**

Academic Degrees

Ph.D. University of Texas at Arlington 2000 Applied Physics
Dissertation: Electro-optics properties of crystalline materials.
M.S. Louisiana Tech University 1998 Mathematics
M.S. Florida International university 1995 Physics
B.S. University of Science and Technology of China 1988 Space Physics

Professional Experience

Aug. 2002 – Present Elizabeth City State University
Visiting Assistant Professor of Physics
May 2002 – August 2002 Louisiana Tech University
Postdoc. Computational modeling on electro-magnetic effects on Biocells
May. 2001 – May. 2002 Avrio Technologies Inc.
Member of technical Staff (projector manager). Researched on the properties and applications of E/O materials; Designed, simulated (Zemax) and tested optics-electronic components & laser, prototyped 1x2 & 2x2 nano-second optical switches (polymer & crystal & ceramic based).
Jan. 2001 – May 2001 Intelligent Fiber Optics Systems Inc.
Optical Scientist (project manager). Tested, designed and simulated optical components, fiber-based subsystems and other optoelectronics devices.
Aug. 2000 – Jan. 2001, Ball semiconductor Inc.
Optics-electronic Engineer, tested and designed maskless photolithograph optical systems.
May 2000 – Aug. 2000 Fresnel Technologies Inc.
Intern. Developed ray tracing program and modeled shrinkage of plastic and polymer materials.
Aug. 1996 – Dec. 2000 University of Texas at Arlington
Half-time Physics labs Instructor.
Nov. 1995 – Aug. 1996 Louisiana Tech University
Half-time Math labs Instructor.
Jan. 1994 – Dec. 1995 Florida International University
Half-time Astronomy labs Instructor.
Aug. 1988 – Dec. 1993 Shanghai salvage training school
Assistant Professor. Teaching Physics-related courses—Geology & Astronomy.

Courses taught:

Principle of Physical Science and lab (GE 152 (L)), Optics (Phys 310), Math Methods of Physics (Phys 441 & 442), Modern Physics (Phys 481 & 482), Mechanics I & Mechanics II (Phys 201 & 202), Electricity & Magnetism II (Phys 302), General Physics and lab (phys 181(L) & 182 (L)), Electrical Circuits and lab (Tcel 131 & 132), Calculus & Analytic Geometry I (Math 157), Astronomy (Ast 2100L, FIU), PHYS 1441L & PHYS1442 L & PHYS 1443L & PHYS 1444L (UT-Arlington)

Recent faculty Load

Fall Semester 2004

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|--------------------------------|------------------|
| PHYS 181 General Physics I | 3 semester hours |
| PHYS 182 General Physics II | 3 semester hours |
| GE 152-01 Physical science | 3 semester hours |
| PHYS 181L General Physics Labs | 3 semester hours |

Summer Semester 2004

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|---------------------------------------|------------------|
| PHYS 181-61/L General Physics I & lab | 4 semester hours |
| PHYS 182-61/L General Physics II &lab | 4 semester hours |

Faculty committee service

Curriculum Committee (developing curricula for major in Physics with six different concentrations including concentration in secondary education; developing new Physics courses) and Faculty Development Committee

Professional Membership

American Physics Society, IEEE, NCAS (served as a judge on NCAS 2004 annual meeting)

Publications (most recent)

"Evidence for droplet reorientation and interfacial charges in a polymer-dispersed liquid crystal cell", S. C. Sharma, L. Zhang, A.J. Tapiawala, and P. C. Jain, Physical Review Letters **87**, 105501, 2001.

"3-D Optical Switch Architectures", Victor Joseph, Lei Zhang, Jie Zhou,
United States Patent (pending), 2002.

"Electro-Optical properties of nematic liquid crystalline devices", L. Zhang and S. C. Sharma, Applied Physics letter (submitted), 2002.

"Polarization switching component of a PLZT Ferroelectric", Lei Zhang, Linda Hayden and Marcos J. Fabio, Journal of North Carolina Academy of Science **120 (3)**, 106-109, 2004.

"A PLZT based 2 X 2 optical switch", Lei Zhang, Linda Hayden and Demetrus Porie. Journal of North Carolina Academy of Science **120 (4)**, 182-185, 2004.

"Study of brain cells by near-infrared Raman spectroscopy" Lei Zhang, Changan Xie, Yong-qing Li (submitted, 2004)

Research interests

Experimental Non-linear-Optics; Experimental biophysics and material physics; Electro-optics properties of E/O materials (including polymer & liquid crystals & Ceramic, etc.) and their opto-electronic devices in fiber-optics telecommunication optical components (switches, modulator, laser, sensors, etc); computer simulations of optical systems.

Paper(s) Presented

"Electric field dependence of optical transmission in a polymer-dispersed liquid crystal", L. Zhang, A.J. Tapiawala, S. C. Sharma, and P. C. Jain, Bull. Am. Phys. Soc. **45**, 102 (2000).

"An Electro-Optical method of detecting the charges cumulated on the interface between nematic liquid crystal and polymer matrix in PDLC materials." L. Zhang and S.C. Sharma, Journal of North Carolina Academy of Science **120 (2)**, 82, 2004.

Reference

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