

# Curriculum Vitae

## Dr. Wang Qin

Born: October, 1967, Zhejiang Province, China

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(Some of my experiences after 2003 & certifications are shown on the website)

## EDUCATION:

**2004.3~2008.5:** Ph. D degree, major in Opto-electronic, school of Electrical & Electronic Engineering (EEE), Nanyang Technological University, Singapore.

**1985.9~1989.7:** Bachelor degree, major in opto-electronics, department of Information & Microelectronic Engineering, Zhejiang University, China.

## EXPERIENCE:

**2011.12~present:** Jobless

**2009.09~2011.12:** Research scientist in Singapore Polytechnic, Singapore (contract mature)

Completed the mission of the studies and improvements of some issues of dye sensitized solar cell (DSSC), especially those for the commercial application of DSSC, such as:

- Glass frit sealing technology;
- Long term stability study;
- TiO<sub>2</sub> paste preparation process improvement;
- Isolation study of the TiO<sub>2</sub> layer formed by TiCl<sub>4</sub> treatment;
- Correction of solar simulator;

- Involved in the building of pilot run plant for making large size glass frit sealed DSSC;  
Besides, supervised three student's final year project.

**2008.09~2009.09: Research fellow in NTU (Civil & Environmental Engineering school), Singapore (contract mature)**

- Studied the possibility of making flexible DSSC from TiO<sub>2</sub> nanofiber membrane and some other methods for the fabrication of flexible DSSC;
- Completed the mission of the fabrication of a series-connected dye sensitized solar cell which can drive motors under sunlight.

**2008.05~2008.09: Jobless**

**2007.03~2008.05: Project officer/Ph. D candidate in NTU (Electric & Electronic Engineering school), Singapore**

- Involved in the project of a sort of anti-ferroelectric liquid crystal display; to fabricate the sample cell; to setup a system for driving the sample and testing its response time;
- Improved the process control and production efficiency of the batch fabrication of liquid crystal on silicon micro-display cells;
- Based on the previous work on optical phase shift measurement system, further studied the effects of the thermal drift and non thermal drift about the system, improved the measurement accuracy by use of a new data processing method;
- Completed the writing and modification of the thesis for the Ph.D degree on the topic of liquid crystal spiral phase plate.

**2004.03~2007.03: Ph. D candidate in NTU (Electric & Electronic Engineering school), Singapore**

- Completed the design, fabrication and characterization of liquid crystal spiral phase plate (LC SPP);
- From the point of view of the interrelation between orbital angular momentum and rotational frequency shift, found a simpler approach for the determination and experimental verification of orbital angular momentum;
- Fabricated liquid crystal on silicon micro-display cells for a research project;
- Set up an optical tweezers to manipulate micro and submicron size particles using laser beam for supporting the final project teaching in Singapore Polytechnic;
- Completed the numerical ultimate optimization of reflective liquid crystal display for direct-view and single-panel projection applications by use of a new approach.

**2003.11~2004.03: Jobless**

**2002.08~2003.11: Trainee in Nanyang Technological University (EEE school), Singapore (contract mature)**

- As a trainee, involved in the research and training program in optics, which was financially supported by Economic Development Board of Singapore;
- Set up and presented some optics and optical communications experiments by use of the educational kits from Newport Co;
- Studied the basic theory of optical vortex, Laguerre-Gaussian beam and optical tweezers; Designed, fabricated and tested a primary sample of liquid crystal spiral phase plate.

**1999.04~2002.08 Engineer in Namtai Electronic Co. Ltd, ShenZhen, China (permanent position)**

- Experienced in failure analysis of PCB assembly and Chip on Glass related issue;
- Experienced in the installation and maintenance of a large scale pure water production system, pure water cleaning machine and a plasma cleaning machine;
- Experienced in the evaluation of new materials, such as PCB, active carbon filter, clean room using glove, and electrostatic discharge control equipments etc;

**1994.11~1999.04 Assistant manager/Engineer in STD Display Technology Engineering co. Ltd, ShenZhen, China. (permanent position)**

- In charge of the pilot run of liquid crystal display (LCD) cell assembly process (8 months), in charge of the technology of a LCD production line (12 months);
- In charge of the development of new techniques such as using screen-printing instead of typographic-printing for making liquid crystal alignment layer(4 months), and based on those techniques developed, as the group leader completed the mission to build a low cost high output LCD production line (6 months);
- In charge of IQC&OQC and dealing with customer complains (10 months);

**1989.09~1994.11 Project leader / Researcher in Nanjing 55 Research Institute, China. (permanent position)**

- As the group leader, completed the research project of a STN-LCD module, which was used in a kind of portable military radar (2 years and 6 months);

- Joined the developing of TN-LCD technology, and developed a kind of LCD panel possessing wide working temperature range for the application in military aircrafts (2 years);
- Completed the cell assembly of TFT-LCD (6 months).

**1985.09~1989.07: Undergraduate student in Zhejiang University, China.**

- Major in opto-electronic technology;
- Completed the fabrication and measurement of a picoseconds optical-conductive switch based on GaAs substrate in the final year project;
- Completed the measurement of Deep Level Transient Spectroscopy (DLTS) of a p-n diode by use of a new type deep level transient spectrometer developed by a professor in Nanjing university;
- Familiar with the fabrication process of silicon power transistor through the practical experience in a semiconductor company.

**SPECIAL SKILLS AND KNOWLEDGE:**

- Design and fabrication of apparatuses for particular experiment purposes. For example, those apparatuses for the glass frit fusing, dye loading, thermal storage testing and light absorbance measuring for doing research of dye sensitized solar cell etc;
- Design and setup optics system, for instance, the design and setup of an high precision optical phase shift measurement system, an optical tweezers and a CCD imaging system used in a glass scribing machine;
- Using Matlab for the simulation of optical diffraction, numerical optimization of reflective liquid crystal display and data processing of the data acquired from an oscilloscope; Protel and Cadence for layout design. X-ladder for robot control;
- Visual Basic for data acquisition, Labview for generating voltage waveform etc;
- Expert of photolithography, screen printing, Musashi robot for drilling or sealant drawing etc; experienced in the maintenance and repair of various kinds of instruments or equipments common in the clean room;
- Electronic device or circuit failure analysis. For example, failure analysis about PCB or IC die; Familiar with the production processes of liquid crystal display panel, Integrated Circuit, PCB assembly, Chip on Glass (CoG), etc.
- Familiar with the working principles or operation of some common characterization or chemical analysis techniques such as SEM, AFM, laser particle sizer, stylus surface profiler, EDX, ICP-AES, FTIR, AES etc.
- Fair in reading Japanese technical paper.

**AWARD:**

- Be awarded the third Prize of the Advancement of Science and Technology by Ministry of Electronics of China, in 1993, due to the work in Nanjing 55 Research Institute as the group leader in the research project of wide temperature STN-LCD module used in portable military radar.