

## Returnee's Report

Name :	Kazuki Shirota
Status :	Masters course Nagoya Institute of Technology
Name of Exchange University :	Friedrich-Alexander-Universitat Erlangen-Nurnber
Research Theme :	Synthesis and characterization of ZnO nano particles
Duration :	1/10/2012 – 29/1/2012
NITECH Faculty Advisor :	Prof. Yuji Iwamoto
Exchange University Faculty Advisor :	Prof. Wolfgang Peukert
<p>Research Theme in detail :</p> <p>&lt;Goal&gt;</p> <p>ZnO is generally well known for visible green emission phosphor because it has very useful wide bandgap (3.37eV). The emission color can be changed from green to yellow or blue depends on dopants, such as Li<sup>+</sup> or Mg<sup>2+</sup>. Otherwise, Quantum size effect also can change the bandgap. My objective is investigation of relationship between both effects and luminescence properties.</p> <p>&lt;Result&gt;</p> <p>ZnO nano-particles were synthesized by solution phase synthesis. The bandgap became larger by the quantum size effect. Additionally, the bandgap of Mg<sup>2+</sup> doped nano-particles was larger than that of non-doped nano-particles. Therefore, the emission spectra were shifted to shorter wavelength.</p> <p>&lt;Achievement&gt;</p> <p>In this study, the bandgap of ZnO has been successfully changed by the dopant and quantum size effect. My originality is that I successfully realized the both effects simultaneously.</p>	
<p>About the laboratory I was sent to number of faculty and students, methods used in research activity:</p> <p>Prof. Wolfgang Peukert</p> <p>The number of member is about 50</p> <p>There are some research groups. Dr. students lead them.</p>	
<p>Comments about the workshops and seminars I attended :</p> <p>I didn't attend.</p>	

My Ambitions :

I would like to do my research work with various background.

I would like to improve my English conversation ability and try to have efficient discussions with researchers in oversea.

Advice and suggestions for young researchers who will go to exchange universities :

If you have a problem, don't hesitate to discuss with your supervisors.



写真 1 : During the experiment



写真 2 : Trip with the advisor



写真 3 : Picture with the laboratory members