

Returnee's Report

Name :	Shunsuke FUJII
Status :	Masters year 1 Nagoya Institute of Technology
Name of Exchange University :	Friedrich-Alexander-Universität Erlangen-Nürnberg
Research Theme :	Synthesis and characterization of Mg doped ZnO nanoparticles
Duration :	2013/ 9/16~2013/12/14 (90days)
NITECH Faculty Advisor :	Prof. Yuji IWAMOTO
Exchange University Faculty Advisor :	Prof. Dr. Wolfgang Peukert
<p>Research Theme in detail :</p> <p><Objective></p> <ul style="list-style-type: none"> • Synthesis of ZnO nanoparticles by precipitation and flame spray pyrolysis • Comparing of samples synthesized by two methods (precipitation method and flame spray pyrolysis) • Investigating the effect of Mg light doping (0 ~ 1.5 mol%) in ZnO nanoparticles • Investigating the effect of annealing of the samples <p><Goal></p> <ul style="list-style-type: none"> • Band Gap expansion of ZnO-based compound by the synergistic effect derived from the quantum confinement and Mg²⁺-doping <p><Result></p> <ul style="list-style-type: none"> • ZnO nanoparticles were synthesized by precipitation and FSP. • Particle sizes of precipitation-derived and FSP-derived samples were approximately 3 nm and 5 ~ 7 nm, respectively. • The band gap energy of precipitation samples was larger than that of the FSP samples. • It seemed that the small amount of Mg-doping (<1.0 mol%) didn't affect the band gap energy. • The bandgap energy of samples by precipitation became smaller by annealing due to the elimination of the quantum confinement. <p><Achievement></p> <p>The contribution to the band gap expansion of the ZnO-based compound was successfully evaluated for the each effect derived from the small amount of Mg-doping and the effect of the quantum confinement.</p>	
About the laboratory I was sent to number of faculty and students, methods used in	

research activity:

Prof. Wolfgang Peukert

About 50 people

Master course students work under the research guidance of post-doc. stuffs.

Comments about the workshops and seminars I attended :

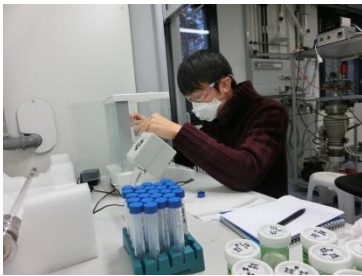
I didn't attend workshops and seminars

My Ambitions :

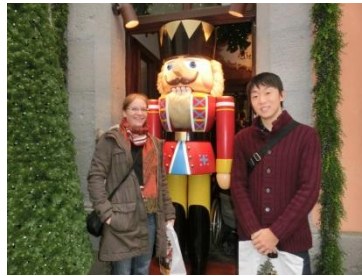
- I would like to continue my research work with different approaches from wider viewpoint which I learned during my stay at FAU.
- I would like to improve my English (both conversation and reading/writing).

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

Please get up and encourage yourself to be active. Grow up by the experiences which you will never expect to gain in Japan. Get your desires fulfilled.



During the experiment



Picture with Prof. Doris



At the Christmas party
drinking