

Host Institution

Tokyo Institute of Technology,
Materials and Structures Laboratory

Host Professor

Prof. Toshio Kamiya

JSPS Fellow

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The pre-doctoral JSPS fellowship allowed me to experience Japanese research life in Prof. Kamiya's group located at the Suzukakedai campus of Tokyo Institute of Technology. The research placement was like a dream coming true as I now had the opportunity to directly discuss my ideas with experts on transparent oxide semiconductors, for which the group achieved world-wide reputation.

My project was focussing on the thin film crystal growth of a novel transparent conducting oxide which shows great potential as a high mobility electron transport layer. Such semiconductors which combine high electronic conductivity with optical transparency find important applications as transparent contacts in solar cells, electron injection layers for light-emitting diodes and as thin film transistors used in flat-panel displays for smartphones and tablets. The subject of my research was the crystal growth of the semiconductor by thermal annealing of a room-temperature deposited amorphous precursor thin film. This facile preparation method allowed me to obtain highly conducting thin films of near-single crystal quality. Furthermore I was investigating the doping of the semiconductor with different impurity elements and concentrations, as the control of the doping level is essential for device applications. By characterization of the electron transport properties with electrical and optical measurements, I investigated how to optimize crystal growth and effective impurity doping of the material.

From the very first day of my stay I experienced great support from my lab members who help me with my experiments. Even though I had heard about the great Japanese hospitality before, I was still surprised about the selfless and generous support that made me feel welcome very quickly in the new environment. Prof. Kamiya was always happy to discuss results with me, supported me with helpful suggestions for my research and it was a great privilege to learn from his extensive knowledge. With most lab members I could communicate



in English without any problems and we had very friendly conversations over lunch time and enjoyed the occasional dinner out or izakaya visits.

The Tokyo Institute of Technology also offers a variety of clubs to join, ranging from various sport circles to cultural societies. Even though most of them are conducted in Japanese, it is worth trying to join to quickly make friends with similar interests. Also I can recommend to participate in TISA events (TokyoTech International Student Association), which promote the cultural exchange of foreign and Japanese students by hosting self-introduction sessions about one's home country, organizing social activities like barbecues or arranging visits to public schools in Tokyo. During your whole stay, try to seek communication with Japanese students as much as possible, since some may be a little shy at first. If you open up first and develop the right mind-set, you will soon be rewarded with great Japanese friends who can introduce you to their fascinating country and help you to fully immerse yourself in this exciting new environment.

