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INVESTIGATOR(S):

Name: Zetian Mi
Email: ztmi@umich.edu
Phone Number: 7347643963
Principal: Y

Organization: **University of Michigan - Ann Arbor**

Address: 3003 South State Street, Ann Arbor, MI 481091274

Country: USA

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Submitted By: Zetian Mi

Email: ztmi@umich.edu

Phone: (734) 764-3963

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Major Goals: This project is related to the travel support for plenary and invited speakers to attend the 11th International Symposium on Semiconductor Light Emitting Devices (ISSLED), which was held in Banff, Canada, Oct. 8-12, 2017. The conference was chaired by Prof. Zetian Mi at University of Michigan, Ann Arbor, Dr. George Wang at Sandia National Labs, and Prof. Zlatko Sitar at North Carolina State University. ISSLED is a specialized biannual international meeting covering current challenges in semiconductor light emitting devices. This is the only meeting in this field that focuses primarily on the new understanding and interdisciplinary science behind the light emission phenomena rather than commercial aspects of the technology. By addressing various challenges in greater depth and detail not possible in broader topical and society meetings, the symposium aims at educating young researchers by offering broader plenary talks and focused discussions. Significantly, this meeting brings scientists and engineers around the globe to address the challenges for achieving high power laser diodes in a broad wavelength range, including visible and ultraviolet, which are important for the mission of Department of Defense. The participant support will be in the form of small grants to help covering registration cost and travel of selected individuals.

Accomplishments: The 4-day meeting comprised 6 different activities: plenary talks (one every morning) addressing specific topics ranging from UV LEDs, lasers, micro LEDs, and visible devices, invited talks giving more focused personal view of a specific challenge or opportunity, contributed talks selected to support or contrast the preceding invited talk, poster sessions, organized open discussions stimulating information exchange, clarification, and opinion, and private discussions among researchers working on similar challenges.

157 abstracts were accepted, including 47 abstracts from students. The important topics that were covered by the conference included: design and growth, characterizations on materials and devices, polar, non-polar and semi-polar materials, droop phenomena, substrates, homo- and hetero-epitaxy, nanostructures and nanodevices, processes, fabrications, manufacturing, and packaging, phosphors and solid state lighting, light emitting devices, lasers and leds, UV-emitters, photonics and plasmonics, optoelectronics, spinoptronics, theories, physics and light-matter interactions, novel materials, techniques, devices, and applications, device performance and reliability, energy conservation and generation.

Training Opportunities: Nothing to Report

Results Dissemination: Nothing to Report

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Honors and Awards: Nothing to Report

Protocol Activity Status:

Technology Transfer: Nothing to Report

**Travel Support for
International Symposium on Semiconductor Light Emitting Devices**

Banff, Canada, October 8-12, 2017

Project Report

1. Major Goals

Semiconductor light emitting devices are becoming a crucial part of our everyday life as they are replacing low efficiency lighting options, illuminating screens of our personal devices, enabling high speed communications and high density storage, lighting the roads, etc. The commercial successes in these fields were enabled by decades of dedicated research and development in various disciplines spanning from synthesis of precursor molecules, growth of crystals and thin films, understanding and control of electrical and optical properties, to device design, fabrication and testing.

However, despite the tremendous commercial success, the work related to semiconducting light emitters is far from being complete. The field faces tougher and tougher challenges in seeking higher and higher performance in visible emitters and needs to develop new approaches, thinking, and physics to enable short wavelength emitters (particularly UV-C) and a new revolution in light sources. Recognizing early on that this field is an ever-moving target encountering new challenges and facing new opportunities, the research community recognized that there was a need for a science-based, open forum to enable exchange and focused discussion among researchers that was not possible through any other forums and the International Symposium on Semiconductor Light Emitting Devices (ISSLED) was born.

The first two ISSLED symposia were held in Chiba – Japan (1996, 1998) with follow on symposia in Berlin – Germany (2000), Cordoba – Spain (2002), Gyeongju – South Korea (2004), Montpellier – France (2006), Phoenix – Arizona, USA (2008), Beijing – China (2010), Berlin – Germany (2012), and the most recent one in Kaohsiung -Taiwan in 2014. The last symposium was in the spirit of the International Year of Light (IYL) and the Nobel Prize for the work leading to an efficient blue LED.

This project is related to the travel support for plenary and invited speakers to attend the 11th International Symposium on Semiconductor Light Emitting Devices (ISSLED), which was held in Banff, Canada, Oct. 8-12, 2017. The conference was chaired by Prof. Zetian Mi at University of Michigan, Ann Arbor, Dr. George Wang at Sandia National Labs, and Prof. Zlatko Sitar at North Carolina State University. This is the only meeting in this field that focuses primarily on the new understanding and interdisciplinary science behind the light emission phenomena rather than commercial aspects of the technology. By addressing various challenges in greater depth and detail not possible in broader topical and society meetings, the symposium aims at educating young researchers by offering broader plenary talks and focused discussions. Significantly, this meeting brings scientists and engineers around the globe to address the challenges for achieving high power laser diodes in a broad wavelength range, including visible and ultraviolet, which are important for the mission of Department of Defense. The participant support is in the form of small grants to help covering registration cost and travel of selected individuals.

2. Accomplishment

The 4-day meeting comprises 6 different activities: plenary talks (one every morning) addressing specific topics, invited talks giving more focused personal view of a specific challenge or opportunity, contributed talks selected to support or contrast the preceding invited talk, poster sessions, organized open discussions stimulating information exchange, clarification, and opinion, and private discussions among researchers working on similar challenges. The latter two are particularly useful and important for young researcher and students, who will be encouraged to participate.

157 abstracts were accepted, including 47 abstracts from students. The important topics that were covered by the conference included: design and growth, characterizations on materials and devices, polar, non-polar and semi-polar materials, droop phenomena, substrates, homo- and hetero-epitaxy, nanostructures and nanodevices, processes, fabrications, manufacturing, and packaging, phosphors and solid state lighting, light emitting devices, lasers and leds, UV-emitters, photonics and plasmonics, optoelectronics, spinoptronics, theories, physics and light-matter interactions, novel materials, techniques, devices, and applications, device performance and reliability, energy conservation and generation.

The participant support was in the form of small grants to help covering registration cost and travel of selected individuals, including plenary and invited speakers, which significantly enhanced the quality of the conference.