ナノフォトエレクトロニクス研究室　1

1）当該研究室の研究成果について

(*) Excellent ( ) Very Good ( ) Good ( ) Fair ( ) Poor

時間分解 STM 発光など、非常に興味深い成果が得られていると思います。

2）当該研究室構成員の学会活動について

( ) Excellent ( ) Very Good (*) Good ( ) Fair ( ) Poor

今後、中心的な役割が増えていくと思われます。

3）当該研究室構成員の社会貢献について

( ) Excellent (*) Very Good ( ) Good ( ) Fair ( ) Poor

コンスタントにこなしていると思います。

4）当該研究室の競争的資金の獲得状況について

( ) Excellent ( ) Very Good (*) Good ( ) Fair ( ) Poor

成果の内容から見れば、もっと獲得しても不思議では無いと思います。

5）国際共同研究・連携研究・連携教育活動の実績について

( ) Excellent ( ) Very Good (*) Good ( ) Fair ( ) Poor

数を増やせば良いとは思いませんが、積極的に取り組めば広がる可能性は大きいと思います。

6）共同利用・共同研究拠点活動の実績について

( ) Excellent (*) Very Good ( ) Good ( ) Fair ( ) Poor

興味深い内容について活動が成されていると思います。

7）その他、総合的なコメント

限られたメンバーで、興味深い成果を出し、十分な活動が行われていると思います。

ナノフォトエレクトロニクス研究室　2

1. How would you evaluate the research activities in this period?

( ) Excellent (*) Very Good ( ) Good ( ) Fair ( ) Poor

The research activities of the group in the period of 4/2013 - 3/2019 were very good, with several good communication papers published. Noteworthy, are the papers concerned with the detection of metal-phase transition of VO2 at the nanoscale with ps time resolution and local nanoscale light emission from carbon nanotubes. These papers lie foundation for the development of nanoscale waveguides and electronic memories or switches that operate using small power. Another worthy research activities are concerned with the study of light generation from chalcogen alloys. The group had also a very extensive presence at major conferences related to Photonics and Nano-electronics.

2. How would you evaluate the activities of the members in the laboratory for the academic societies?

(*) Excellent ( ) Very Good ( ) Good ( ) Fair ( ) Poor

Members of the group were involved in the organization of international symposium and were serving committee or chairperson duties on several domestic conferences.

3. How would you evaluate the contribution of the laboratory to society?

(*) Excellent ( ) Very Good ( ) Good ( ) Fair ( ) Poor

The contribution of the group to the society was on the multilevel stage and included educational activities for children, instructions and education for industry personnel as well as activities for the government. On a long term the group research activities can have a more profound impact as some of their research results lie foundation for the development of new nano-electronic devices.

The group main contribution to the society is in education of many young individuals in the field of nano-photo electronics via their bachelor, master and doctoral degree supervision.

4. How would you evaluate the lab's level of funding?

( ) Excellent (*) Very Good ( ) Good ( ) Fair ( ) Poor

The group is successful in receiving external funds on a steady basis.

5. How would you evaluate the lab's collaborative research, including international joint research and collaborative education?

(*) Excellent ( ) Very Good ( ) Good ( ) Fair ( ) Poor

The group has many domestic research collaboration on a wide range of subjects. It has also active international collaboration.

6. RIEC is one of Japan's "Joint usage/Research Center" or "Nation-wide Cooperative Research Projects" institutes. How would you evaluate the achievements of work done under this framework?

(*) Excellent ( ) Very Good ( ) Good ( ) Fair ( ) Poor

Achievements of the group done under the framework of joint usage/research center is substantial and hold promise for more achievements in the future.

7. Additional or overall comments

Overall, the group performance is very good.

ナノフォトエレクトロニクス研究室　3

1. How would you evaluate the research activities in this period?

( ) Excellent (*) Very Good ( ) Good ( ) Fair ( ) Poor

The laboratory has an important research activity with about 4 articles published annually in international peer-reviewed journals. The research results are actively presented in domestic and international conferences as well as in invited talks.

The research is organized in 4 different topics corresponding to the historical developments of the laboratory. The combination of scanning probe microscopy with optical spectroscopy is a very original approach. Only few laboratories in the world possess such dual expertise. It allows investigation at high resolution in the spatial scale as well as in the time scale. Also, the optoelectronics properties are important with regards to future applications and it is remarkable that a patent has been delivered although the lab is positioned in basic science investigations.

2. How would you evaluate the activities of the members in the laboratory for the academic societies?

(*) Excellent ( ) Very Good ( ) Good ( ) Fair ( ) Poor

Prof. Uehara is a regular screening member for Grants-in-Aid for Scientific Research and Prof. Katano has an active activity as journal reviewer. They were both members of the organizing committee of RIEC International Symposium ISPOC 2017 and are contributing to the organization of other domestic conferences.

3. How would you evaluate the contribution of the laboratory to society?

(*) Excellent ( ) Very Good ( ) Good ( ) Fair ( ) Poor

The laboratory is regularly active during Tsuken Festival or Open Campus days. Also, it is contributing in promoting the use of common-use equipment outside the university and in providing lectures and practical training to companies. These activities reflect the important effort devoted to contributions to society.

In addition, many lectures are regularly given. 5 Master course students have been supervised, as well as 13 undergraduate course students.

4. How would you evaluate the lab's level of funding?

( ) Excellent (*) Very Good ( ) Good ( ) Fair ( ) Poor

During the 6 FY of the evaluation period the laboratory has received continuous funding for a total amount of more than 10,000,000 yen. 5 different research grants have been received, from Grants-in-Aid for Scientific Research, RIEC Nation-wide Cooperative Research Projects or from the Minoru Ishida Foundation. I believe that the level of funding is amply sufficient for conducting the planned research, although it should be largely insufficient in case of instrumental need, for example if important maintenance work is required or if a new instrument should be bought. The experimental setups that are used are complex and fragile, and care should be taken to maintain it at the state-of-the art level.

5. How would you evaluate the lab's collaborative research, including international joint research and collaborative education?

( ) Excellent ( ) Very Good (*) Good ( ) Fair ( ) Poor

A collaboration with University of Tours in France was initiated in 2013 and is still ongoing. 4 research articles have been published within this collaborative framework, which represents a very good achievement. However, this is the only collaboration reported here, it seems that most of the collaborative work is performed in the framework of "Joint usage/Research Center".

6. RIEC is one of Japan's "Joint usage/Research Center" or "Nation-wide Cooperative Research Projects" institutes. How would you evaluate the achievements of work done under this framework?

(*) Excellent ( ) Very Good ( ) Good ( ) Fair ( ) Poor

A total of 9 projects are reported under the framework of "Joint usage/Research Center", among them 4 are still ongoing. 5 of these projects are led by Prof. Katano or Prof. Uehara. The projects include basic research topics but also some more industry-relevant investigations.

In summary, these achievements are certainly representing an important part of the workload of the laboratory

7. Additional or overall comments

The Nano-photoelectronics laboratory has a quite unique research activity combining scanning probe microscopy and optical spectroscopy that is an important strength. It is a productive laboratory, active in all different aspects of the research work, as reported above. While the laboratory is well recognized in Japan, as demonstrated by the different prizes and awards received, it may suffer from under-recognized reputation at the international level, that probably brings difficulties to publish in very high ranking level journal. The staff members should keep their effort in contributing regularly to international conferences, particularly abroad. This contributes to the international reputation of the laboratory and can also bring more opportunities to create international collaborations.