REPORT of the INTERNATIONAL ADVISORY BOARD (IAB)
Research Activities of 2012-2013
Jerzy Haber Institute of Catalysis and Surface Chemistry,
Polish Academy of Sciences

Introduction

The Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences (hereinafter 'Institute') addresses a multidisciplinary area at the interface between chemistry, physics, biology, engineering and material sciences which is of critical importance for the development of a sustainable society, thus making a key contribution to:

i) sustainable use of energy and mobility;
ii) efficiency in using resources;
iii) manufacture and production:
iv) development of innovative materials;
v) quality of life and health;
vi) environmental protection;
vii) cultural heritage preservation

Addressing these important and challenging areas for the future of society it is necessary to have a critical mass of well-integrated competences, which can combine the fundamental knowledge to an applied vision able to catalyze the transfer to companies and innovation. For this reason, it is necessary to maintain a good balance between fundamental investigations and development. We appreciate the effort of the Institute to maintain this balance as well as the effort made in applying the fundamental knowledge developed in the Institute to contiguous areas, from biology and soft matter to cultural heritage, where there is a common platform of fundamental knowledge in both dry and wet surface and interface science, material and colloid science, and catalysis.

Impact of IAB previous report recommendations

We recognize the successful reorganization of the internal scientific structure of the Institute in response to the recommendations of the previous report of IAB, in particular regarding:

- the effort to aggregate the research topics into larger common projects, which is a necessary action to highlight the identity and visibility of the Institute;
- the new structure of research groups introduced in 2012, with a significant reduction in their number with an increase in their critical mass and research potential;
- the opening of new three research groups to address new important topics;
- the process of continuous adapting the Institute's structure to address emerging needs and frontiers of research.

IAB greatly appreciate the effort in promoting young researchers leadership, with four research groups led by researchers below age of 45.

We expect that this reorganization will lead in excellence and flexibility in research, and hence enhance high-quality publications and capacity to raise funds.

We recognize the relevant improvement made in the last two years in terms of number and quality of publications in high-impact journals.

We commend the Institute for expanding scientific capabilities: for example for the successful participation in the SOLARIS project (Krakow synchrotron), the engaging in various projects of the national programme PIOG "Innovative Economy", and achieving the status of leading national research centre KNOW in physical sciences.

IAB appreciates the high quality of presentations, with clear evidence of the increasing collaborations internal, national and international. Improved presentation and language skills of young scientists was notable.

Research, education and promotion of science

The Institute has further strengthened in the last two years its leading position in research, educations and promotion of science. In particular:

- high ranking in the PAS evaluation of the Institutes in the area of chemistry
- large and increasing number of high impact papers;
- increasing EC structural funds (Human capital - doctoral studies);
- intensified collaboration with several research centres and organization of joint laboratories;
- participation in several consortia, research clusters and international networks including coordination of COST Action CM1101;
- active participation in several educational activities, from doctoral programmes to postgraduate schools and collaboration with high schools;
- significant activities in promotion of science, with open-door days, and participation in Science Festivals.

Transfer of research to application

IAB appreciates the effort made in transferring the results of fundamental research to applications, such as the projects in the frame of EU structural funds programme and the application of modeling on cultural heritage preservation to energy saving of museums. A further promotion of the research innovation capacities of the Institute is encouraged by the IAB.

Funding aspects

The statutory subsidy from the Polish Ministry of Science and Higher Education and the external funding (non-statutory) has increased in the last two years. The largest part of these funds is for fundamental research, which is consistent with the purpose of the Institute. IAB feels that to further expand the capacities of the Institute it is necessary to secure funds from EU and international programmes, such as ERC and Marie Sklodowska - Curie grants, and research projects supported by companies.

Scientific productivity

IAB is satisfied with the improvement of the scientific productivity, both in respect to quality and quantity. Productivity is significantly above the criteria established by the Ministry.

Personnel policy

Reorganization has increased the opportunities offered to young researchers for leadership and promotion. IAB appreciates the policy of annual evaluation of the personnel, but the evaluation criteria should be refined to include aspects such as related to the opening of new research areas and long-term projects which are essential for the future development of the Institute.
Effort should be dedicated to attract foreign PhD students and post-docs, through the participation in international activities (Marie Sklodowska - Curie, Erasmus Mundus, etc.) to overcome limitations in funds available.
IAB also encourages young researchers to spend part of their training outside Poland. The senior staff should spend periods (both long and short) carrying out research in foreign Institutes. The Institute should actively promote this policy to maintain scientific health and motivation of students and staff.

Opportunities

The increased participation in consortia, such as the Marian Smoluchowski Krakow Research Consortium "Matter-Energy-Future", the national consortium "Polish Synchrotron", SPINLAB lab., etc., extend the opportunities for new topics and collaborations in the area of surface and material science, and catalysis.
Cultural Heritage provides an area particularly rich in opportunities for high profile international impact.

Recommendations

Research strategy
A long-term strategy, based on the vision of frontiers of research in the area addressed by the Institute, and the possibility to exploit the fundamental knowledge to promote innovation, should be developed and formalized. The strategy should be developed by the Director with the Group Leaders.

Assessment
IAB recognizes the critical importance of raising funds and publishing high-quality work. Assessment should also include other factors such as the investment in the future, opening new research areas, and application of the research generated in the Institute.

Scientific quality
IAB appreciates the effort made in improving quality of research. Some areas are clearly world-class, but other areas still need to increase quality. The scientific leadership should take responsibility to achieve this aim.

Funds
The Institute should intensify the effort to secure ERC, EU and other international funds and research contracts with companies.

International mobility
IAB recommends that a policy to encourage international mobility for young and senior staff be established. The expectation of time abroad will increase the attractiveness of the Institute as a place to study for a PhD. Research periods in foreign labs will enhance the creativity, diversity and reputation of the scientists and hence improve the international recognition of the Institute.

Kraków, February 18, 2014

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