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Code of Ethics for Scientists
at the Institute of Solid State Physics, University of Latvia
(for material science and nanotechnology research)

PREAMBLE

The main task of materials science and nanotechnology (M&N) research is the discovery of new materials and/or new properties of the existing materials through systematic research, consideration, observation and experimenting, with the aim of increasing the understanding about properties of materials without creating threats to the environment, public safety and health.

M&N research¹ is an activity that the scientific staff of the Institute of Solid State Physics, University of Latvia (ISSP UL) conduct academically, in the industrial environment and elsewhere without social, political, and cultural boundaries, freely defining research questions, developing theories, summarising the evidence and using appropriate research methods.

With the aim of articulating the M&N research principles, criteria for the ethical and responsible work of the scientific staff of the ISSP UL acting in the field of M&N, the primary objective of this Code of Ethics (Code) is to create a unified understanding of the responsibility of the scientific staff of the ISSP UL.

The process of scientific research carried out by the scientific staff of the ISSP UL acting in the field of M&N research, irrespective of the source of funding, shall be based on the ethical standards of M&N research and principles of discussion as set forth in the Code, and comply with international and national law.

I. GENERAL PRINCIPLES

The scientific practice of the scientific staff (the Scientists) of the ISSP UL is based on the following fundamental principles of research integrity:

Reliability: ensuring the quality of research that reflects in the plan, methodology, analysis, and the use of sources;

¹ M&N research covers all research activities concerning issues at nanoscale (≈ 1 to 100 nm). It includes all nano-objects created by man, both purposefully and accidentally. It covers research from fundamental research to applied research for technology development, as well as the research based on scientific advice, standards, and regulations relevant to M&N

Honesty: designing, conducting and reviewing research, reporting on it and disseminating its results in a transparent, fair, complete and objective manner;

Respect for the colleagues, participants of the study, society, ecosystems, cultural heritage, and the environment;

Responsibility for the research, its management and organisation, for the training and supervision;

Sustainability: M&N research activities shall be safe and ethical, and shall promote sustainable development that is consistent with the sustainability objectives of the European Community and with the goals set by the United Nation Organisation: do not harm or cause any biological, physical, or moral hazard to humans, animals, plants, or the environment.

Caution: M&N research activities shall be carried out in accordance with the principle of precaution, carefully evaluating the potential environmental, health and safety impacts due to these activities and their results, and taking appropriate precautions in proportion to the required level of protection, while contributing to the research progress for the benefit of the society and environment.

Inclusiveness: M&N research activities shall be performed with participation rights based only on the scientific merit of the researchers, independent of their race, sex, or national origin.

Responsibility: scientists shall be responsible for the effects of the research results on the environment and human health.

II. SCIENTIFIC ETHICS

1. BASIC PRINCIPLES OF SCIENTIFIC ETHICS

The scientists shall work in accordance with the generally accepted principles of ethics, binding legislation², and international human rights law, with the principles of humanity, understanding that science is an essential part of the cognition and culture of the world.

Scientific research shall be carried out in such a way as to avoid harm to the environment and humans as much as possible. In addition to respecting ethical principles and fundamental rights, M&N research shall ensure the positive effects of the study on the society and observance of the public interest.

The Scientist of the ISSP UL shall not:

- engage in solving scientific problems if the standards of scientific research are not ensured;
- support the involvement of inappropriately qualified persons in research activities, as well as misuse the research or its results for anti-science purposes;
- act in their scientific activity on the basis of national, racial, or political criteria;
- disseminate scientifically unreliable information, which could damage or unduly enhance the professional reputation of the ISSP UL, its research staff or of the other scientists.

2. IMPROVEMENT

Throughout their careers, the Scientists shall continue the process of research and improvement, following the current results, publications, visiting conferences, participating in discussions with other scientists in their research field.

² Law on Scientific Activity.

Before launching each research project, the Scientists shall carefully develop or familiarise themselves with the research plan, methodology, and analysis.

Throughout their careers, the Scientists shall participate in training for ethics and research integrity, as well as in the development or improvement of various research procedures.

According to their experience, the Scientists shall engage in educational activities, providing their young colleagues and students with counselling and/or training in order to properly design, plan and structure their research, and maintain the culture of research integrity.

3. RESEARCH

The Scientists, while developing research ideas, shall take into account the current situation, respecting the public interest.

In order to carry out the laboratory work required for research, the Scientist shall treat the infrastructure of the ISSP UL with care, observing the research process rules, safety and quality management measures developed by the ISSP UL.

The Scientist shall maintain a critical attitude in his professional activity: facts and the evidence shall be valued higher than the views expressed by scientific, social or political authorities. The scientist shall continuously deepen and expand his/her knowledge and professional qualifications.

The Scientists shall plan, implement, analyse and document research in a careful and thoughtful way, using research tools appropriately and conscientiously. The Scientist shall ensure that the scientific findings and results of M&N research are properly discussed in the scientific community through participation in international conferences, publication of articles, sharing the best practices with other M&N research laboratories.

The Scientists shall publish the results and explanations of the research in an open, fair, transparent and precise manner and, if determined by law, respect the confidentiality of the data or findings. The Scientists shall report the results in a way that is in line with the standards of the relevant field, and, where appropriate, so that the results can be tested and reproduced. The Scientist shall ensure that M&N scientific data on M&N research results, as well as related information (such as relevant standards, references, labels, impact studies) are prepared for the publication in a clear and comprehensible manner. Results shall not be withheld from publication on the basis that they are inconvenient to someone or do not fit into the work hypothesis.

4. PROTECTION MEASURES

The Scientists shall treat their research subjects with respect and diligence and in accordance with legal and ethical standards.

The Scientists shall duly take into account the health, safety and well-being of the public, collaborators, and other research-related people.

Processing of personal data shall be carried out in accordance with Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC.

‘Personal data’ means any information relating to an identified or identifiable natural person (‘data subject’); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person.

The Scientists shall recognise and prevent potential harm and the risks associated with their research.

The Scientists shall not allow plagiarism or data counterfeiting, or research practices that may pose a risk to health of the ISSP UL staff, to public safety, to health, to environment, or may give rise to public distrust.

The Scientists have an obligation to notify the Management of the ISSP UL about the non-compliance in studies, possible damage, identified risks, and about the measures required to improve the environmental safety of M&N research.

5. DATA PROTECTION

The Scientists shall ensure documentation of research activities, the proper management and control of all data and research materials, including unpublished ones, as well as their safe storage.

The Scientists shall ensure that access to data is as open as possible and as closed as necessary to ensure data management in accordance with regulatory requirements and good practice principles.

The Scientists shall provide transparent information on how to access their data and research materials, or how to use them.

The Scientists shall ensure that the data used in the research is legal, and that the results of the research are quoted so that all contracts or agreements involving research results include objective and fair rules for the management of the use of these results, property rights and/or their protection under intellectual property rights.

The intellectual property policy and property management system of ISSP UL shall comply guidelines of World Intellectual Property Organization, designed especially for Academic and Research Institutions³.

6. RESEARCH RESULTS

Each scientists is solely responsible for the content of his/her or collaborative multi-author publication. The use of other scientist's research or its fragment in without a due reference to its author or the source is considered as a plagiarism and an infringement of copyright. Repeated publishing of the previously published articles without a reference is ethically unacceptable. The same scientific data can only be used if their first publication is indicated.

If the result of the research is a joint work of several scientists, the Scientists agree on the order of indicating the authors, recognising that the authorship is based on a significant contribution to the planning of research, the collection of relevant data, the analysis or interpretation of the results. The publication of any results obtained as a collective research shall be coordinated with the head of the project or the research team, and all co-authors.

The Scientists shall ensure that their published results are available to their colleagues in a timely, open, transparent and precise manner, and that they are honest in their communication with the general public and in mass media.

The Scientists shall acknowledge the significant work and intellectual contribution of other authors, including collaborators, assistants and sponsors who have adequately impacted the reported research, and shall quote the relevant research precisely. The scientists who have taken a real and creative role in the implementation of the relevant scientific research are considered as authors of scientific results and publications based on them. Persons who have contributed to the data interpretation or presentation, or otherwise greatly contributed to the research and whose contribution does not meet the authorship criteria shall be acknowledged. The sources of financing shall also be acknowledged. The Scientist of the ISSP UL has an obligation to address an inhumane or improper use of scientific

³ WIPO Intellectual Property Policy Template for Academic and Research Institutions

achievements that is harmful to humanity by notifying and warning the ISSP UL management, scientists and the public about the consequences of such action.

The Scientists shall notify the Management of the ISSP UL of any conflict of interest, and financial or other support for the research or publication of the results.

Regardless of whether the Scientists submit publications in subscription editions, open-access editions, or publish their articles in any other way, they shall follow the same criteria as described above.

The Scientists render help to the research community by participating in expertise, peer review, and evaluation. Scientists-reviewers review and evaluate the documents submitted for publication, eligibility of funding, appointing, promotion, or remuneration in a duly transparent and justified way, avoiding the situations of conflict of interest.

III. MANAGEMENT ETHICS

The Management shall contribute to the creation of a safe and modern research infrastructure and creative scientific atmosphere at the ISSP UL.

The Management shall take care of the support that the Scientists require in administrative matters, which are implemented by the administrative staff of the ISSP UL.

The Management shall inform the Scientists in an open and timely manner about the internal legislation, procedures, regulations of the ISSP UL, which the Scientists are bound to respect by the obligation during the implementation of the research and research processes. The Management undertakes to inform the Scientists involved in M&N research about the good practice of M&N research, as well as to improve and develop it at the ISSP UL.

The Management shall timely address the issues that are essential for the Scientists to perform their duties properly, providing a clear understanding of the research purpose, methods and resources for their implementation.

The Management shall prevent and eliminate any rude, demagogic interference in scientific work and decision making through the power mechanism and rights.

The Management is convinced that men and women are equally creative and innovative. Management shall commit to promoting gender equality and ensuring equal opportunities for researchers. Measures will be taken to foster an enabling environment, including support of work-life balance initiatives, career development, and prevention of any discrimination.

The Management shall support the Scientists' initiative and proposals to improve research processes, the research environment, and safety.

The Management shall provide the necessary activities for obtaining and maintaining the Quality Certificate ISO 9001:2015 Cleanroom Infrastructure Services for research, education, innovation, development and prototyping.

The Management shall ensure that all research partners are responsible for the integrity of the research by agreeing in advance on the research objectives and process, the expected results and standards for the integrity of the research, the laws and regulations to be applied, the protection of the collaborators' intellectual property and the procedures for resolving the conflicts and possible cases of professional violations. The Management undertakes to inform the Scientists involved in the co-operation projects accordingly.

The Management shall comply that all agreements regulating the field of intellectual property follow and are regulated by laws of Latvian State: Law on Scientific Activity⁴, Labour Law⁵, Patent Law⁶, Law

⁴ <https://likumi.lv/ta/en/en/id/107337>

⁵ <https://likumi.lv/ta/en/en/id/26019>

⁶ <https://likumi.lv/ta/en/en/id/153574>

on Industrial Property Institutions and Procedures⁷.

IV. ADDRESSING THE VIOLATIONS

Following the Director's resolution, the ISSP UL shall establish the Ethics Commission, which is approved by the Scientific Council of the ISSP UL. The following actions shall be within the competence of the Ethics Commission: providing the consultations on issues of scientific ethics and consideration of complaints addressing the Scientists' ethics violations.

In the case of the most significant violations, forgery⁸, falsification⁹, and plagiarism¹⁰, the Ethics Commission, when assessing the consequences of a violation, shall draw up a proposal to the the Management of the ISSP UL for disciplinary measures or the termination of employment and/or action for damages from the responsible Scientist.

In the cases of other violations of good research practice (e.g. "self-plagiarism"¹¹, failure to disclose the research results, failure to ensure the independence of the research process¹², biased results, etc.), the Ethics Commission shall adopt a decision, considering the responsibility of the Scientist regarding the violation committed and comparing it with the consequences.

When considering any complaints regarding Scientists' Ethics violations, the Ethics Commission shall be guided by the following principles:

Fairness: The process of evaluating the complaint is conducted in an appropriate and fair manner (on an equal basis towards everyone), subject to the presumption of innocence.

The defendant Scientist shall be provided with detailed information on the complaint and the opportunity to provide explanations and evidence.

The penalty for the violation shall be commensurate with the severity of the violation.

Integrity: The processes for assessing violations are fair, objective, and confidential to protect the involved parties.

The parties involved in the assessment of the violations shall report of any conflict of interest that may emerge during the investigation.

General procedures for action in the case of a violation of the good research practice shall be published and made public in the ISSP UL in order to raise awareness of the causal relationship between the violation and its consequences.

V. IMPLEMENTATION OF THE CODE

The Human resources specialist acquaints the Scientists with the Code. Each Scientist confirms with signature that they are familiar with the Code.

The content of the Code shall be reviewed regularly, but at least on an annual basis, by the Ethics Commission, which, if necessary, makes proposals to the Director of the ISSP UL for its amendments.

The Code shall be publicly available on the website of the ISSP UL.

⁷ <https://likumi.lv/ta/en/en/id/275049>

⁸ Falsifying and recording the results in the way if they were real.

⁹ Impacting research materials, equipment or processes, or modifying, excluding or concealing data or results without justification.

¹⁰ Use of other persons' work and ideas without proper reference to the source, thus infringing copyright.

¹¹ Repeated publication of the previous parts of author's own publication, including translation, without including proper reference or quoting the original article.

¹² If the Scientist allows the sponsor of the research to jeopardise the independence of the research process.