

# METAPANEL FINAL EVALUATION REPORT ON SAS RESEARCH INSTITUTE

Period January 1, 2016 – December 31, 2021

According to § I, section 15 and 16 of Principles of periodic assessment of SAS research institutes adopted under the regulation of § 10, section 5, letter d) Act No. 133/2002 Coll. on Slovak Academy of Sciences and approved by the SAS Assembly on November 21, 2021, Metapanel issued the report with following evaluation and proposal for Institute rating.

<b>Name and address of SAS Institute</b>	<b>Elektrotechnický ústav SAV, v. v. i. Dúbravská cesta 9 841 04 Bratislava</b>
<b>On-site visit date</b>	<b>October 19, 2022</b>

## Scientific quality and productivity

<b>Comments</b> , including strengths and weaknesses (recommended number of characters with spaces: up to 4000)	<b>Rating*</b>
<p>As was the case for most of the institutes, the template provided by the SAS questionnaire did not really allow to reflect the real status of the institute, which was much clarified later by the power point presentations, and in the case of this Institute, also by the availability of the extensive reports to its own International Advisory Board (IAB), and the subsequent recommendations from that Board (2021, 2019,2017). Therefore, the assessment of this Institute was straightforward, as they themselves provided an exhaustive set of measures they have been implementing and monitoring over the past five years, in order to take the recommendations of the last assessment into account.</p> <p>This way of improving the quality of the Institute in all the necessary dimensions, with the help and input of a highly committed IAB, should serve as an example for all other Institutes of the Academy.</p> <p>The slide deck provided by the Institute reveals:</p> <ul style="list-style-type: none"> <li>- A sound ambition as evidenced in the 'IEE characteristics';</li> <li>- The structure of the Institute (30 scientists, 10 postdocs, 20 PhD) organized in 4 departments: <ul style="list-style-type: none"> <li>o Physic and Technology at Nanoscale (nanoscale magnetism, field controlled antidot arrays, 2D materials,...)</li> </ul> </li> </ul>	A/B

<ul style="list-style-type: none"> <li>○ III-V Semiconductors (high-power electronics, GaN switches, radiation detectors, ...)</li> <li>○ Micro-electronics and sensors (MEMS, ..)</li> <li>○ Superconductivity (energy applications, high-field and fusion magnets, propulsion motors, ...)</li> <li>- A clear and efficient governance structure, with well-defined roles: <ul style="list-style-type: none"> <li>○ Management board, with a visionary director</li> <li>○ Scientific Board</li> <li>○ International Advisory Board</li> </ul> </li> <li>- The guidance of a strategic plan and the path followed since 2017 to generate it.</li> <li>- The available infrastructure</li> <li>- The increasing performance in terms of publications (number and impact)</li> <li>- The impressive performance in number of participating EU projects</li> <li>- The role of the Institute in education its own people and providing soft skill courses</li> </ul> <p>The biannual exercise conducted for the IAB has provided a kind of self-reflecting mirror towards the Institute's researchers, amplified by the IAB members, who provided a lot of pertinent and relevant recommendations, that obviously have been taken up very seriously by the Institute's leadership, leading to the current assessment, the results of which are impressive (see the Section on Strategy and Potential for Development).</p> <p>This way of interaction with an IAB, that is taken seriously, leading to a series of recurrent and regular improvements, should serve as a role model for all other Institutes of SAS.</p> <p>Overall, the committee's impression of the Institute is overall positive</p>	
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### Societal, cultural, or economic impact

<b>Comments</b> , including strengths and weaknesses (recommended number of characters with spaces: up to 4000)	<b>Rating*</b>
<p>That most of the projects in which the Institute is involved have an economical impact, goes without saying. It should however have been documented better in how exactly the results of the project are transferred towards the Slovakian industry. Said in other words, how does the local industry and society benefit from (part of) the results of these many projects.</p> <p>Maybe another important point of attention is the need for a more mature plan for science outreach. Mentioned now in the questionnaire under 'social impact' are 'demonstrators' or 'proof-of-concepts' that emanate from the European projects, and as such are an inherent part of most proposals. It is unclear how these cases serve in the level of 'science outreach' and 'science communication'. Nor in the questionnaire, nor in the slide-deck much information can be found on this type of 'soft' impact, e.g. towards schools or citizens.</p>	A/B

## Strategy and potential for development

<b>Comments</b> (recommended number of characters with spaces: up to 4000)	<b>Rating*</b>
<p>In this current assessment of the Institute, we can basically confirm the findings of the several IAB sessions (2017, 2019, 2021) over the past 5 years:</p> <ul style="list-style-type: none"> <li>- A recurrent effort to implement the recommendations of the previous assessment and the bi-annual IABs, including                             <ul style="list-style-type: none"> <li>o A matured mission statement nowadays as compared to the one 5 years ago</li> <li>o A longer-term research strategy adopted by the departments</li> <li>o Reorientation of some research areas</li> <li>o Strengthening of the interaction with universities</li> </ul> </li> <li>- A noticeable improvement of the quality of research as evidenced by the quality (impact) and quantity of publications</li> <li>- A noticeable improvement in securing external research grants</li> <li>- An excellent visionary leadership</li> <li>- An impressive rejuvenation effort: young people on all levels: PhD, postdoc, new staff members, including several returning to Slovakia</li> <li>- Providing soft-skill trainings for them</li> <li>- Developing mechanisms to detect new research opportunities (e.g. quantum). Maybe a bit more effort required to monitor divisions that are not really excellent, to try to remedy or to discontinue their activities and replace by more promising ones</li> <li>- The need to identify clear objectives, quantitative as well as qualitative so that each department can monitor and improve its own performance</li> <li>- A point of improvement might be the science and technology outreach to Society, in combination with an even more professional communication strategy of the department</li> </ul> <p>The combined efforts of the leadership of the Institute have convincingly culminated in a top performance in all dimensions thinkable, which has led the foundation for a potential jump towards excellence in the next 5 to 10 years.</p> <p>In the interviews, we could witness a splendid culture and atmosphere of openness and transparency, combined with scientific seriousness and commitment to the departments's and Institute's objectives. Young scientists are actively supported and the overall performance is monitored on a regular basis, at all levels (individual researchers, research groups, departments) as it should be.</p> <p>A smaller point of attention is to devote some more effort to international positioning, benchmarking and branding.</p>	A/B

\*Rating on a scale from A to D, where A is internationally leading; A/B part is internationally leading, overall is visible at the European level; B is visible at European level; B/C part is visible at the European level, overall is solid; C is solid; C/D is partly solid; D is not solid;

## OVERALL ASSESSMENT

### General comments on the Institute performance (2016-2021)

The Institute is doing very well, and has nicely implemented and monitored all of the recommendations of the last assessment.

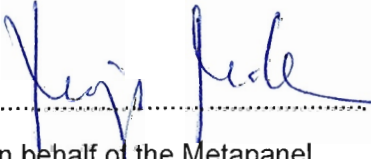
### Comments and recommendations for further improvement and development of the institute

- The fact that apparently from 01/01/2022 the IPR resides with the institutes, offers great opportunities for the development and exploitation
- The committee endorses future strategic actions as proposed by the Institute itself:
  - o Keep the focus, detect potential new focus areas, de-emphasize less performing ones
  - o Maintain the quality of the lab infrastructure by new investments
  - o Keep on improving the overall strategy and performance in duo with the IAB
  - o Keep on investing in rejuvenation on all levels (PhDs, postdocs, staff)
  - o Invest more in technology transfer (patents, licences, bilateral industrial contracts, spin-off companies)

### Proposal of overall institute rating:

**A/B**

December 12, 2022



On behalf of the Metapanel

Prof. Marja Makarow