Our research team is working on **innovative, efficient methods to harvest solar energy** by the application of spectrum splitting. One of the concepts is to divide the incoming spectrum between electrical and thermal energy generation to provide both electricity and heat for industrial processes. Light concentration is also applied thus high temperatures and efficiencies are feasible. By tuning the concentration levels and the splitting wavelength(s) the ration between electrical energy and produced heat, as well as the thermal output temperature can be adjusted to the needs of the given process. The overall energy efficiency in this case is much higher than with PV only. This concept could be also applied for high temperature electrolysis to **produce green hydrogen with good energy efficiency**.

**INTRODUCTION OF THE RESEARCH TEAM**

The research team consists of selected members of three research groups: the Laboratory for Semiconductor Technology, the Optical Laboratory and the Thermal Engineering Research group. The experts of these groups are able to cover all aspects of the design and optimization of spectrum splitting electric and thermal solar energy harvesting systems. For detailed introduction [click here](#).

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György BOGNÁR associate professor, Head of Thermal Engineering Research Group  
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**COMPETENCES AND REFERENCES RELEVANT TO THE TOPIC**

- with multidisciplinary approach in modelling, device design and process technology of PV devices, technical optics and thermal modelling and design our research team offers complex high efficiency solar energy harvesting concepts and solutions for the green co-generation of heat and electric energy. Our flexible concept can be tailored to various industrial processes where both electrical energy and heat are needed, like high temperature electrolysis for the efficient production of green hydrogen.

- well-equipped laboratory infrastructure (60m² clean room for specialized PV-device processing, thermal characterization laboratory) and different simulation and CAT-tools.

- significant track record in R&D projects: 15 completed grants, 4 national and 3 EU-funded ongoing projects

- experienced partner in academic-industrial collaboration: 3 spin-off companies, accredited [Digital Innovation Hub](#)

**BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS (BME)**

With its regular high-ranking positions (between 200 and 800) BME is among the top universities (2-6%) globally. At the university’s 8 faculties and 76 departments, there are 1,200 lecturers teaching 5,000 subjects and 10,000 courses each semester. In the H2020 Framework Programme BME has ranked #2 among the Hungarian institutions (67 funded projects). The University is an active member of European Engineering Learning Innovation and Science Alliance (EELISA) European University and the CESAIER association of universities of science and technology. [University webpage](#)

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