The mission of Atomki is to perform fundamental research in experimental and theoretical atomic, nuclear and particle physics, and to apply the physical methods and knowledge in other fields of science like materials research, environmental and earth sciences, biological and medical research etc. Strong emphasis is laid on the development of techniques and instruments for fundamental and applied research, and on solving practical problems for industry, agriculture and medicine. The Institute is strongly involved in undergraduate and graduate physics education.

The Department of Environmental Physics is run jointly by the Institute and by the University of Debrecen. The activity of the researchers of Atomki is rapidly increasing in knowledge and technology transfer. The Institute is hosting a European Research Council (ERC) Starting Grant in the field of nuclear astrophysics.
The Scanning Ion Microprobe is used in various interdisciplinary applications. An ion source designed to produce highly charged plasmas and ion beams.

A detector system used for the study of nuclei of strongly elongated shapes. A spectrometer developed by Atomki for the study of photo- and Auger electrons.

Synthesis boxes for preparation of ¹¹C-, and ¹⁸F-labelled radiopharmaceuticals. A small animal PET for preclinical use developed by Atomki.

Member of the Worldwide LHC Computing Grid (WLCG) to analyse LHC data from CERN. A spectrometer developed by Atomki for the study of photo- and Auger electrons.