Endogenous (nano)particles in the body. What is their function?

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Abstract

Endogenous (nano)particles are a natural part of every living organism. They occur in tissues and cells as storage proteins for certain substances (ferritin) or mediate communication between cells (exosomes). Sometimes their function is unclear. Their size ranges from a few nanometres to several micrometres. These structures can be used in various fields such as nanomedicine, nanoelectronics, cosmetics and bioengineering. The lecture focuses on physical methods for (nano)particles characterization and their utilisation in modern technologies.

About the lecturer

Professor Martin Kopáni studied at the Faculty of Mathematics, Physics, and Informatics from 1994 to 1999. After graduation, he started working at the Institute of Pathological Anatomy as a research fellow. His main activity involved using various physical methods, especially electron microscopy, to detect foreign substances in cells and tissues; for example, copper in the human liver in Wilson's disease and iron in hemochromatosis. Since 2014, he has been working at the Institute of Medical Physics and Biophysics as the head of the institute. His teaching activities include giving lectures to first-year students about the basic processes occurring in the body. He also conducts practical exercises for first-year students. He lectures fourth- and fifth-year students as part of a compulsory-elective course at the Faculty of Medicine, Comenius University, as well as abroad (Wrocław University of Science and Technology, Poland and Aveiro University, Portugal) for PhD students. His scientific work continues to focus on the application of various physical methods in studying the presence and physical properties of mainly metals in cells and tissues. He is a supervisor of students in the Scientific Student Research Activity at the Faculty of Medicine, Comenius University, and a supervisor of bachelor's and master's theses at the Faculty of Medicine, Comenius University, and the Faculty of Mathematics, Physics and Informatics. He has supervised 4 Ph.D. students. He regularly presents his work at international conferences and publishes in professional journals.