

## THIN AND ULTRATHIN PROTECTIVE COATINGS: MULTIFUNCTIONAL AND INDUSTRIAL

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**C**orrosion costs are still huge, reaching up to 1% from gross national product of many industrial countries. From other side, society cannot develop further without considerable saving in energy and materials, and better protecting our environment. Transferring these demands into the coatings world means that the coatings must be as thin as possible and produced by energy and environment saving technologies. Thin and ultrathin coatings have several naturally positive properties as compared with the traditional, thick protective coatings: better elasticity and optical transparency, smaller residual stresses, etc. But thin coatings must be still well protective, wear resistive, and if needed, paintable and/or biocompatible. For development of thin protective coatings, several techniques were used, e.g. atomic layer deposition, ALD, for preparing nanolaminates of metal oxides and electrophoresis for nanographene ultrathin films, and anodizing plus ALD for new thin protective coating applicable for anodizable alloys; the latter technology is widely patented. In the presentation, results of laboratory studies, tests will be presented, first introductions of the methods into industry will be reviewed, and perspectives of further developments will be discussed.



#### Biography

Väino Sammelselg has completed his PhD in 1989 from Institute of Physics of Estonian Academy of Sciences and in the following years, he was Visiting Researcher in several universities of Finland and Sweden. In 2003, he was elected Inorganic Chemistry Professor in the Institute of Chemistry of University of Tartu and is serving till today; also he is Head of Materials Science Department in the Institute of Physics. His main scientific interests are thin film and coating technology and characterization, corrosion protection and nanotechnology applications. He has published more than 140 papers referred in WOS database, and has h-index 32.

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