

# Materials surface engineering development trends

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## ***Abstract***

***Purpose:*** The purpose of the monograph is to provide scientific workers and students with comprehensive knowledge on the original methodology of computer aided prediction of development trends in materials surface engineering together with the examples of own materials science-heuristic research used for reviewing the correctness of the newly developed methodology.

***Design/methodology/approach:*** The overall methodology of the integrated computer aided prediction of development trends in materials surface engineering embraces also the methodology of interdisciplinary materials science-foresight-IT research including a group of originally matched, but commonly known analytical methods and tools as well as an original methodological concept, allowing to pursue further research, that encompasses context matrices, the Critical Technologies Book of materials surface engineering and the neural networks-aided creation of alternative scenarios of future events.

***Findings:*** The substantive assumptions of the methodology of computer aided prediction of materials surface engineering development and the examples of reviewing such methodology's correctness, performed under own works together with a state of the art review, with special consideration given to its importance for the research performed related to the integrated information technology including: virtual organisation, web platform and neural networks and importance of the concept of technology e-foresight and technology e-transfer.

***Research limitations/implications:*** The newly established methodology has the broad prospects of future applications. It can be applied in all kinds of technology, thematic and environmental foresights, as well as in other areas of computer aided knowledge and information management as an approach enabling to utilise the currently available economic, system-related, technological, financial and social potential for fulfilling the strategic development objectives.

**Practical implications:** *The purpose of the newly developed concept of technology e-foresight is to disseminate the results of technology e-foresight of materials surface engineering in SMEs lacking the funds to undertake own research in this filed.*

**Originality/value:** *The monograph describes the substantive assumptions of an original methodology of integrated, computer aided prediction of materials surface engineering development and the examples of reviewing such methodology's correctness made under own materials-science and heuristic works. An original value is also represented by the concept of integrated information technology, technology e-foresight and technology e-transfer.*

**Keywords:** *Materials surface engineering; Development trends; Computer integrated development prediction methodology; Technology e-foresight; Technology e-transfer*

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