

Dmytro Sumtsov

INTERRELATED ELEMENTS OF LASER AND OPTOELECTRONIC SYSTEMS

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Interrelated Elements of Laser and Optoelectronic Systems /

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The overall design of laser and optoelectronic systems has many interrelated elements, of which it makes sense to consider the following basic aspects and interrelationships in order to fully develop and optimise this kind of technology. The strategic importance of high-speed identification of smart tools and devices in real time and in the context of the use of elements of artificial intelligence and artificial neural networks in the analytical units of control and monitoring systems.

Features of design of interconnected elements of laser and optoelectronic tool systems of all levels in conditions of application in their nodes and modules of management and control of elements of artificial intelligence and artificial neural networks, including the prospect of successive transition to quantum computers and their equivalents are today one of the most important directions of development of smart technologies.

Ensuring the required level of processor technology performance in control and monitoring nodes using advanced methods of thin-film microassembly boards production, including the use of flexible automated production modules and high-speed methods of electroplating and electrochemical coatings, realising processes without negative influence of the electrode edge effect and with electrochemical cells operating in a directed flow of electrolyte.

The use of on-line control both at the level of supersystem and at the level of interconnected subsystems with the use of measurement technology based on electromagnetic radiation function and electrical resistance in real time and the principles of advanced high-speed resonance spectroscopy.

Keywords: *Laser systems; Optoelectronic systems; Interconnected elements of laser and optoelectronic systems; Analytical blocks of control and monitoring systems; Flexible automated production modules; Reliability of supersystems; Reliability of subsystems; Edge effect of electrodes; Reliability of supersystems of basic technical solutions in optical devices and instruments; Micro-automation systems; Electrochemical cells; Directed electrolyte flow*

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