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ENERGY-SIGNAL CONCEPT OF DETERMINING THE STATE OF DENTAL TECHNOLOGICAL PROCESS AS ENERGY-ACTIVE OBJECT

ANNOTATION

The application of energy-signal concept to the selection procedure of determining the state of dental technological process as energy-active object (dental composite material), is grounded.

Key words: dental material, polymerization, energy-active object, ultraviolet radiation, selection system.

Such features as initiation, activation, catalysis with specific action of energy carrier with meanings defining its decisive feature in a certain characteristic range are typical for energy-active object due to the definition. For such objects an important factor in the formation of signal is so called "division of energy" among that one that is used for the maintenance process of the system performance, and that one, which part of it goes for the creation of signal about the state of the system and transferring of data about it. That is why, it is important for a mathematical model to reflect this process with its quantitative and qualitative aspects.

An important and significant aspect in manufacturing technology of a single artificial product is its evolution in time, which means its beginning and the end. This leads to the need for special measures to ensure uniformity of statistical material and sufficiency (representation) of the sample. In particular, it is important in determining of the state of dental technological process, as a peculiar energy-active object.

The method that is based on the Beer-Lambert Law is used to determine the status and control in the manufacturing process of single dental products (e.g. seals). If we take into account the above properties that are inherent for an energy-active object, which serves as a one-time dental product, the essence of the method is: dental material is put on the problem area of the tooth and exposed with UV radiation, created from special photopolymerizators; a part of ultraviolet radiation is absorbed during polymerization of dental materials (it means, it goes for maintaining the polymerization process), and some of it is reflected from the surface of applied dental material and from the surface of polymerized layer of material. Thus, mentioned above "division of energy" is the one that goes to maintain the polymerization process (that is a part of energy which is absorbed by dental material), and the one that goes for creation of signal about system status and transferring of data about it (that is the part of energy reflected from the surface layer of polymerized dental material).

In terms of chemical processes in order to determine the state of dental technological process it is necessary to conduct the evaluation process of catalysis (it means changing speeds of chemical reactions) using the specific effect of energy carrier, i.e. ultraviolet radiation. The biggest change of such speeds is observed at the beginning and the end of the process of irradiation of dental material with ultraviolet radiation. To ensure possibility of multiple evaluation of speed changes of passing polymerization process of dental material, it is proposed to carry out irradiation of this material not by continuous ultraviolet radiation, but by pulses of given duration. The necessity of using of pulsed operation mode emitter and parameters of this mode.

Conclusions

It is proved the using of energy-signal concept for selection procedure of determining the status of dental technological process, as energy-active object. Parameters of technological process of dental problems are optimal for selection and processing of signals, both in terms of maintaining the informative signal structure and in terms of reducing errors that can occur during selection.

Energy makes the method of state information selection using the reflected rays considering the fact that the process is evolutionary. That is why the intermittent modernization selection which must take into account the speed change state of the object and duration of pulses reflected UV light is used, to ensure sufficient quality of statistics for determining the characteristics of reflected signal, i.e. the accuracy of the constant process, just as happens when measuring heart rate, the number of beats per minute that is determined counting for 15 seconds and multiplying by four. This compromise solves the optimization problem.

The most important requirement for measurement tools which determine the parameters, is to provide sufficient statistical data as data for calculating. Nowadays, special measuring equipment of proper quality is used to define admeasurement and processes.