SUMMARY:
Nano-technology and nano-materials have become an extremely active field of research in the last decade, because of their potential application in different areas like medicine, information technologies, energy storage etc. The unique properties of nano-sized particles, which are subject of quantum mechanics, determine the great interest.

The main purpose of using nano-technologies in dental materials is achieving higher mechanical properties, higher abrasion resistance and less shrinkage of dental composites, improved optical and aesthetic properties of composites and ceramics. Till now the nano-technologies are used in production of wide range of dental materials: light polymerization composites and their bonding systems, imprint materials, ceramics, coatings for dental implants and bioceramics. The aim of this paper is to make an overview of nano-materials, designed for and used in the practice of dental medicine.

Key words: laboratory composites, Adoro, Vectris, post-monoblock overlay

PURPOSE:
The aim of this article is to make an overview of nano-materials, designed for and used in the practice of prosthetic dental medicine. Part 1 will discuss the clinical applications of laboratory composites (LC).

METHODS AND MATERIALS:
Adoro laboratory composite with Vectris reinforcing fibers. Core built-ups, (fig. 1, fig. 2) monoblock overlays, post-monoblock overlays, (fig. 3, fig. 4) crowns, (fig. 5, fig. 6, fig. 7) bridges, (fig. 8, fig. 9) veneers (fig. 10).

Fig. 1. Multi-component core built-ups
Fig. 2. Core built-ups

Fig. 3. Post-monoblock overlay on molar

Fig. 4. Post-monoblock overlay on premolar

Fig. 5. Adoro crown of a central incisor

Fig. 6. Adoro-Vectris molar crowns
RESULTS:
For a period of 8 years were produced 92 core built-ups, 51 monoblock overlays, 75 post-monoblock overlays, 112 crowns, 56 three-unit bridges, 21 four-unit bridges. On the third year only one pin, of a core built-up on tooth 22, broke. Except from the several small edge breaks in the border area Adoro – tooth enamel and the slight abrasion in the occlusial contact points, the restorations are functionally suitable.

DISCUSSION:
Laboratory composites were underestimated for a long time. Their bad reputation is almost due to the weak mechanical properties of the first LC. With the introduction of nano-technologies and the improvement of the mechanical properties and their polish, LC are no longer “temporary materials”. They are widely used today as long-term temporary restorations and sometimes as permanent ones.

CONCLUSION:
The general conclusion is that properties like: high aesthetics, easy technology, mechanical strength, good patients’ adaptation to the material, opportunity for clinical repairs, low allergy-causing potential and economic expedience, demonstrated the LC as contemporary nano-materials and proved their position in the dental medicine.
REFERENCES:

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