

МЕДИЦИНСКИ УНИВЕРСИТЕТ – ВАРНА
“Проф. д-р Параскев Стоянов”
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FACULTY of DENTAL MEDICINE

Department of Oral Maxilla-Facial Surgery, Periodontology and DID

SYNOPSIS

Of WRITEN EXAMINATION

On DENTAL MATERIALS SCIENCE

1. History of the main dental materials.
2. Dental materials classification. Mechanical, physical, biological and technological requirements.
3. Structure of dental materials. Crystalline and amorphous materials. Main types of crystal lattices and their defects. Polymorphism and allotropy.
4. Thermal properties of dental materials – heat conductivity, heat capacity, thermal expansion and shrinkage, melting and sublimation.
5. Physical properties of dental materials – density, viscosity, electric conductivity.
6. Physical properties of dental materials – adhesion, wetting, imbibition and solubility.
7. Tensile strength of dental materials. “Loading-Deformation” diagram.
8. Tensile strength of dental materials - elastic modulus, strength properties of resilient, ductile and brittle materials.
9. Hardness of dental materials. Measuring methods: Moos hardness, Brinell hardness and Vickers hardness.
10. Hardness of dental materials. Measuring methods: Rockwel hardness, Knoop hardness and Shore hardness.
11. Abrasive wear of dental materials – factors influencing on it and investigation methods.
12. Metals and Alloys – kinds and properties. Crystallization.
13. Investigation of the alloys – thermo-chemical analysis, Time-temperature (T-t) curves and diagrams of the state.
14. Investigation of the alloys – macroscopic and microscopic analysis of the alloys.
15. Metal alloys – mechanical mix, diagram of state.
16. Metal alloys – solid solutions, diagram of state, liquation.
17. Noble dental alloys – composition, “carat” and “standard”, types and kinds of noble alloys.
18. Comparison between noble and base dental alloys.
19. Composition and properties of the steels, used in dental medicine.

20. Corrosion of dental alloys, nature of galvanic corrosion, types of galvanic corrosion in the mouth.
21. Biological importance of the corrosion, pathogalvanism, factors accelerating the corrosion in the mouth and measures for decreasing the corrosion.
22. Cold treatment of dental alloys – processing by material removal, processing by plastic deformation.
23. Heat treatment of dental alloys, main parameters of the process. Homogenization, recrystallization, quenching and tempering.
24. Plastics – types and composition, Polymerization stages.
25. Composition and polymerization of hot-polymerizing plastics.
26. Structure and properties of dental plastics. Alterations and defects in mistaken of the technological regime.
27. Dental porcelain – manufacturing, types.
28. Mechanical, physical and biological properties of dental porcelain. Volume changes.
29. Metal ceramic, alloys for metal ceramic and requirements to them.
30. Classification and requirements to the impression dental materials.
31. Silicone impression materials – types, volume changes, peculiarities, application.
32. Mechanical, physical, biological and technological requirements to the obturation materials.
33. Dental cements – types and purpose.
34. Toxicity and adhesion of dental cements.
35. Composites – main components, types and properties.
36. Polymerization shrinkage of composites and adhesion to the HTT.
37. Comparison between chemical polymerization and light curing composites.
38. Dental amalgams – composition, preparation and factors influencing the amalgam quality.
39. Dental amalgams – volume changes, advantages and disadvantages.

2012.

Lecturer:

(Assoc. Prof. Dr Ts.Dikova)

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Of WRITEN EXAMINATION

On DENTAL MATERIALS SCIENCE

1. Technological properties of dental materials – plasticity, welding ability, alloying ability, workability. Fluidity – factors influencing on it and measuring methods.
2. Optical properties of dental materials – color, brightness, metamerism, opalescence, luminescence.
3. Systems for color determination, Munsell wheel, color parameters.
4. Mechanical properties and types of mechanical tests.
5. Strength of dental materials – compression strength, bending strength, impact strength, fatigue strength.
6. Investigation of the alloys – X-ray diffraction analysis and spectral analysis.
7. Chromium and titanium alloys. Alloys for metal ceramic.
8. Composition and properties of cold-polymerizing plastics.
9. Elastic (soft) plastics – requirements and types.
10. Manufacturing of porcelain dental construction, thermal regime of porcelain firing.
11. Artificial teeth: purpose, requirements, types and comparison.
12. Metal ceramic, bond between the metal and the porcelain.
13. Hard impression materials.
14. Thermo-plastic impression materials.
15. Hydrocolloid impression materials.
16. Elastomeric impression materials.
17. Temporary dental cements – types and purpose.
18. Permanent dental cements – types, composition and purpose.
19. Chemical polymerizing composites – composition, volume changes and application.
20. Light curing composites – composition, shrinkage and factors influencing on it.
21. Gypsum materials. Modifications of the gypsum and gypsum types in dentistry.
22. Gypsum solidification – factors influencing on it and methods determining the beginning and the end of the solidification.

2012.

Lecturer:

(Assoc. Prof. Dr Ts.Dikova)

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Of PRACTICAL EXAMINATION

On DENTAL MATERIALS SCIENCE

1. Measuring by caliper;
2. Measuring by micro-meter;
3. Composition and preparation of white gypsum;
4. Composition and preparation of cold-polymerized polymers;
5. Composition and preparation of hot-polymerized polymers;
6. Composition and preparation of zinc-phosphate cement;
7. Composition and preparation of zinc-carboxylate cement;
8. Composition and preparation of glass-ionomer cement;
9. Composition and preparation of ZnO – Evgenol impression material;
10. Composition and preparation of irreversible hydrocolloid impression material;
11. Composition and preparation of solid silicone impression material;
12. Composition and preparation of paste silicone impression material;
13. Composition and preparation of cream silicone impression material;
14. Composition and preparation of chemical activated composite material;
15. Composition and preparation of light cured composites;
16. Composition and preparation of Ag amalgam;
17. Determination of residual monomer in object made of acrylic plastic.

2012.

Lecturer:

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