BIOMATERIAL KEDOKTERAN GIGI

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1. BIOMATERIAL KG
2. ANALISIS PEMILIHAN MATERIAL
3. STANDAR DAN SPESIFIKASI MATERIAL

BIOMATERIAL KEDOKTERAN GIGI

Dokter gigi → Pelayanan kesehatan gigi

Promotif Preventif

Kuratif Rehabilitatif

Bekerja → pengetahuan
ketrampilan
alat**, BAHAN**
obat-obatan

Peran

Ilmu Biomaterial Kedokteran Gigi

???

MATERIAL

Sesuatu yg mempunyai massa, menempati ruang, serta mempunyai sifat tertentu dan energi.

BIOMATERIAL

Substansi inert (tidak mempengaruhi dan dipengaruhi) secara sistematis dan farmakologis di desain untuk ditanamkan di dalam atau digabungkan dengan jaringan hidup

(*The Clemson University Advisory Board for Biomaterials*)

ILMU BIOMATERIAL KEDOKTERAN GIGI

Ilmu yg mempelajari tentang

struktur, komposisi, sifat, manipulasi

MATERIAL

berkontak

jaringan keras / lunak tubuh manusia

berinteraksi

sistem biologis

untuk mengembalikan fungsi dan estetis

dalam suatu sistem stomatognatik

DENTAL MATERIALS

Ilmu tentang material kedokteran gigi

yang meliputi cakupan luas tentang

terminologi, komposisi, struktur mikro, dan sifat sifat

yang digunakan untuk menjelaskan atau memprediksi performa biomaterial untuk tujuan preventif dan restoratif (Anusavice dkk., 2013).

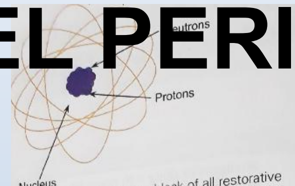
Meliputi dental material / biomaterial KG untuk

1. preventive dentistry *2. public health dentistry*
3. operative dentistry *4. oral and maxillofacial surgery*
5. implantology *6. orthodontics*
7. periodontology *8. pediatric dentistry*
9. prosthodontics

(Anusavice dkk., 2013).

BUILDING BLOCKS ON BIOMATERIALS

TABEL PERIODIK UNSUR



e atom is the basic building block of all restorative rials. Every atom consists of a nucleus of protons harged) and neutrons (no charge) surrounded by lectrons (negatively charged). In its native state, is electrically neutral, having an equal number of l negative charges. The number of protons deter- lentity of the atom in the periodic table of elements 0-2) and is known as the atomic number. Thus, the ber determines the element. The number of elec- eir configuration around the nucleus largely deter- the element bonds with other elements to form the e use in clinical practice.

ber of protons in the nucleus of the elements. hemical rules dictate the number of elements in Each element has a one- or two-letter symbol; er is always capitalized. If there is a second letter, ase. Remarkably, from this table, we can predict and chemical behavior of an element and general it will interact with other elements. For example,

Bonds between Atoms

Atoms form various types of bonds with one another, and it is these bonds that, in large part, determine the physical and chemical properties of dental materials. It is the electrons of atoms and the configurations of atomic electron clouds that govern bonding between atoms. The electrons of the elements interact in several basic ways (Figure 0-3). In this introductory discussion, we will only touch upon the most basic types of bonds.

! ALERT

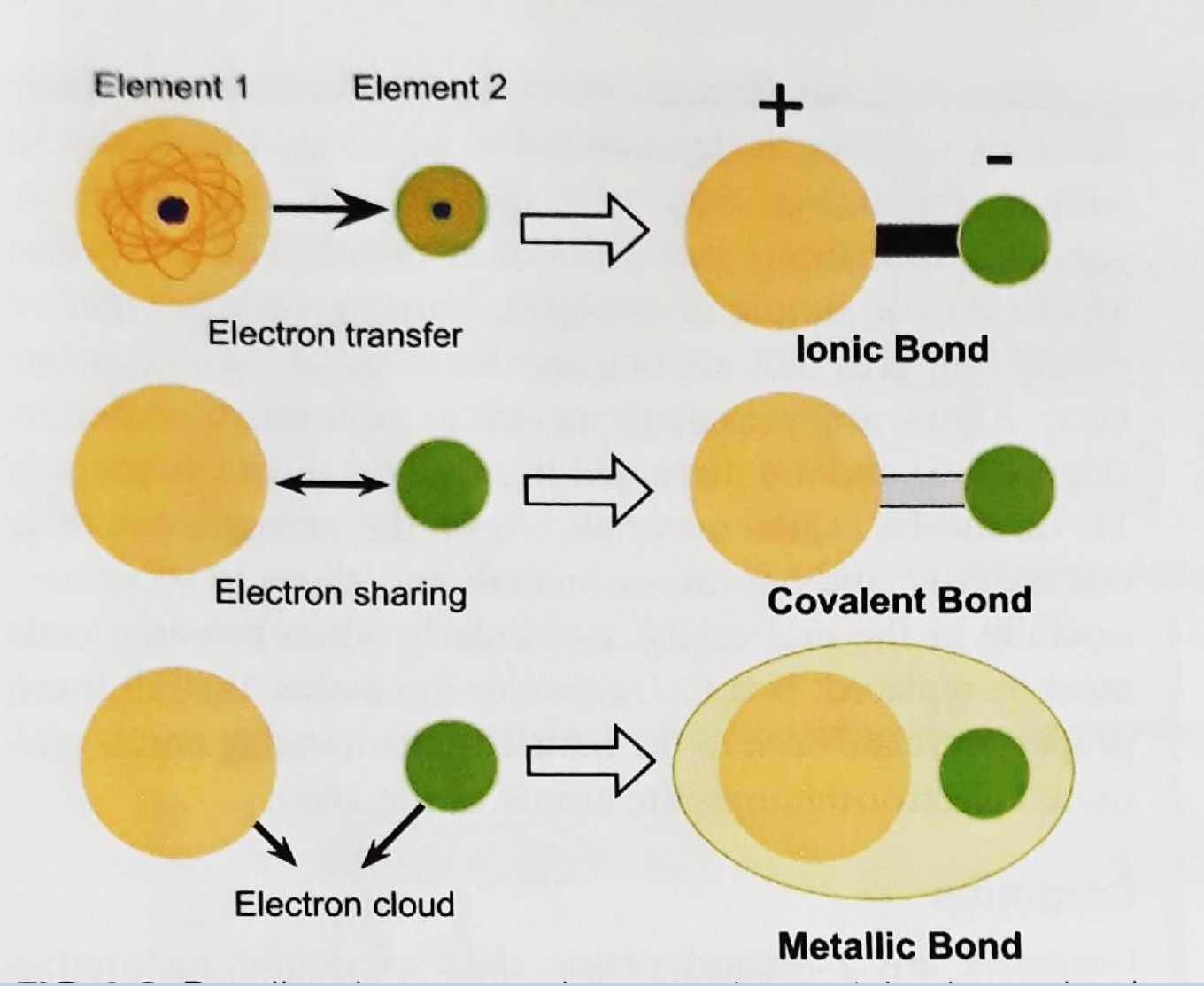
It is the electrons of atoms and the configurations of atomic electron clouds that govern bonding between atoms and ultimately the clinical behavior of restorative dental materials.

Ionic bonds are formed when an electron from one element is given completely to another in return for forming the bond (Figure 0-3, *upper diagram*). In dental materials, ionic bonds are often formed between electron-donating elements and oxygen. Ionic bonds are common in dental ceramics and are among the strongest type of bond. Ionic bonds also are very directional, tolerating little movement of the atoms that they bind. One unique aspect of an ionic bond is that it leaves the

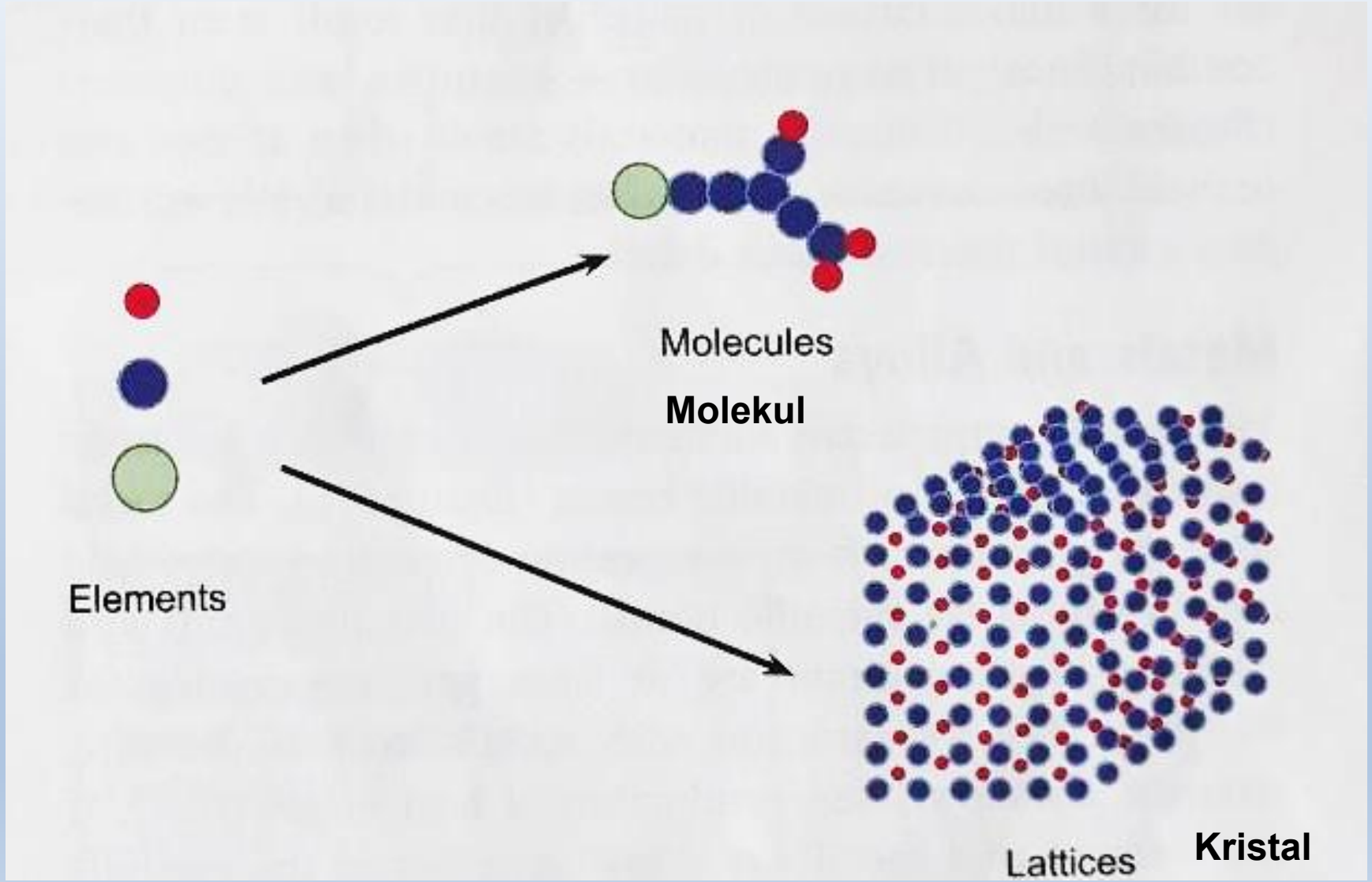
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	H																	He
2	Li	Be											B	C	N	O	F	Ne
3	Na	Mg											Al	Si	P	S	Cl	Ar
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
6	Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn

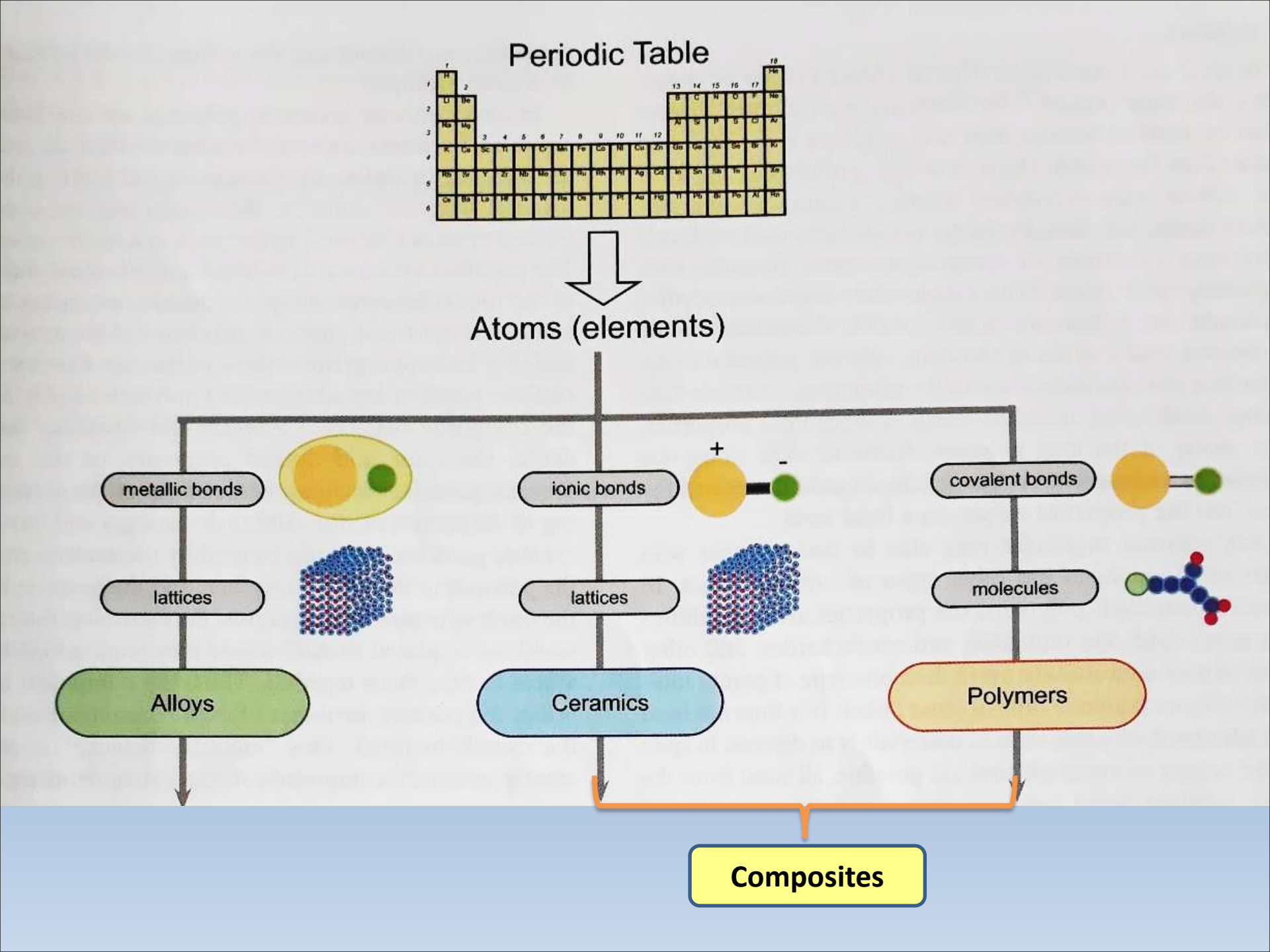
e periodic table of the elements is the tabulation of all elements in the known universe, currently numbering about 109 shown here). The rows of the table (called periods) determine the nature of the electron configuration of the elements; es dictate the number of elements in each row or period. Each element has a two-letter symbol. For example, gold is position of an element in the table is predictive of its electron configuration and its bonding, chemical behavior, and clinical For example, metallic elements (those that tend to release some of their electrons) are generally situated toward the left e, whereas nonmetallic elements (those that tend to ...

IKATAN ANTAR UNSUR (ATOM)



SUSUNAN ATOM / UNSUR



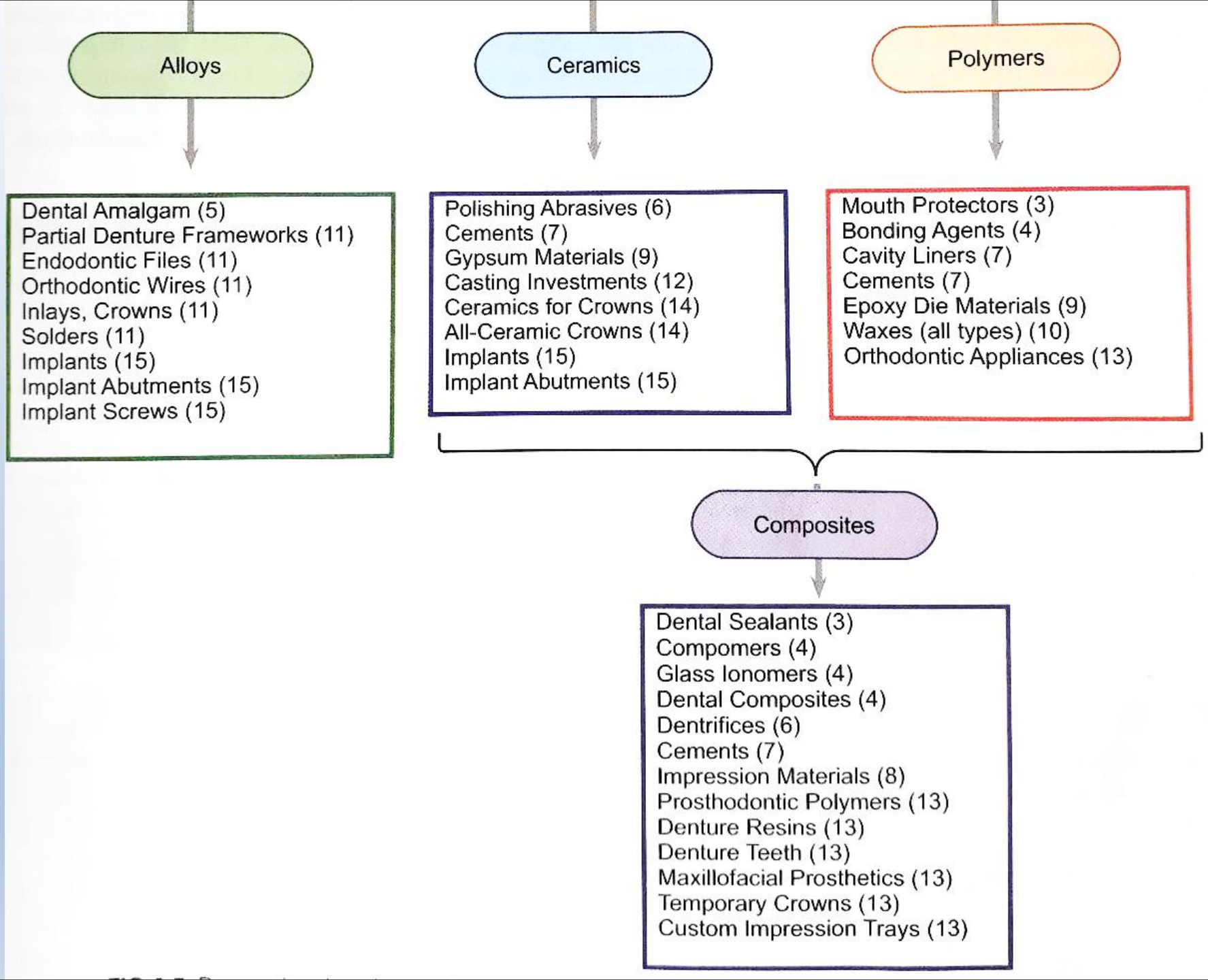

Periodic Table
Atoms (elements)
metallic bonds
ionic bonds
covalent bonds
+
-
lattices
lattices
molecules
Alloys
Ceramics
Polymers
Composites

MENGENAL

MATERIAL KEDOKTERAN GIGI

BIOMATERIAL KEDOKTERAN GIGI

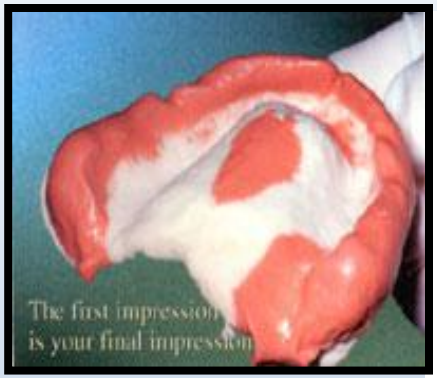
CONTOH ???

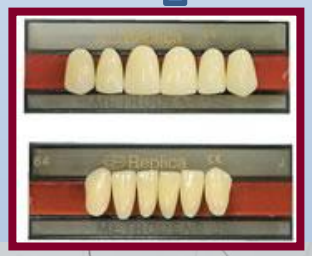

Alloys
Ceramics
Polymers
Dental Amalgam (5)
Partial Denture Frameworks (11)
Endodontic Files (11)
Orthodontic Wires (11)
Inlays, Crowns (11)
Solders (11)
Implants (15)
Implant Abutments (15)
Implant Screws (15)
Polishing Abrasives (6)
Cements (7)
Gypsum Materials (9)
Casting Investments (12)
Ceramics for Crowns (14)
All-Ceramic Crowns (14)
Implants (15)
Implant Abutments (15)
Mouth Protectors (3)
Bonding Agents (4)
Cavity Liners (7)
Cements (7)
Epoxy Die Materials (9)
Waxes (all types) (10)
Orthodontic Appliances (13)
Composites
Dental Sealants (3)
Compomers (4)
Glass Ionomers (4)
Dental Composites (4)
Dentrifices (6)
Cements (7)
Impression Materials (8)
Prosthodontic Polymers (13)
Denture Resins (13)
Denture Teeth (13)
Maxillofacial Prosthetics (13)
Temporary Crowns (13)
Custom Impression Trays (13)

Klasifikasi Biomaterial berdasarkan struktur atom

1. Polimer
    a. Alami : protein, agar
    b. Sintetis : Polimetil metakrilat
2. Keramik
3. Logam
4. Komposit

DENTAL BIOMATERIAL DAN APLIKASINYA





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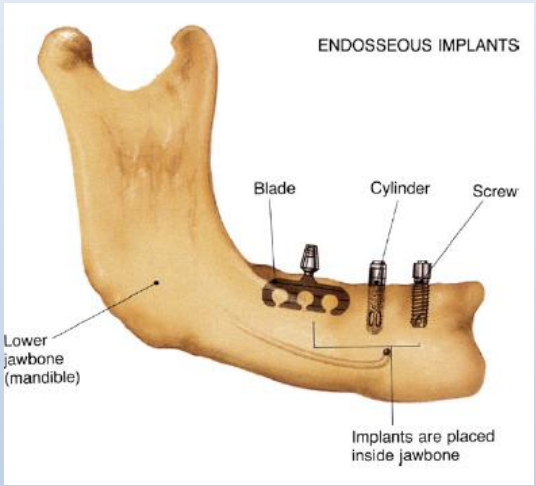

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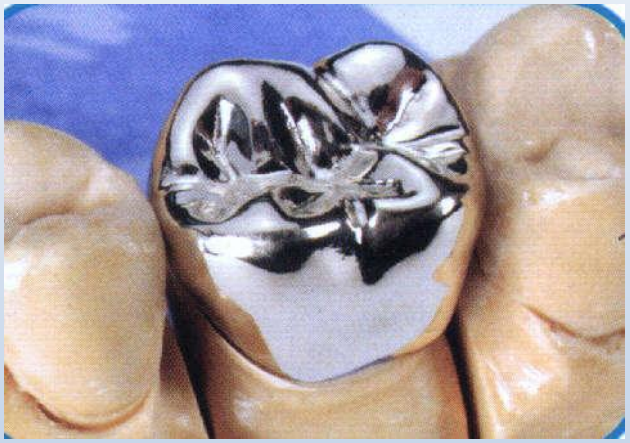

Pantai Drini (ND, 2013)