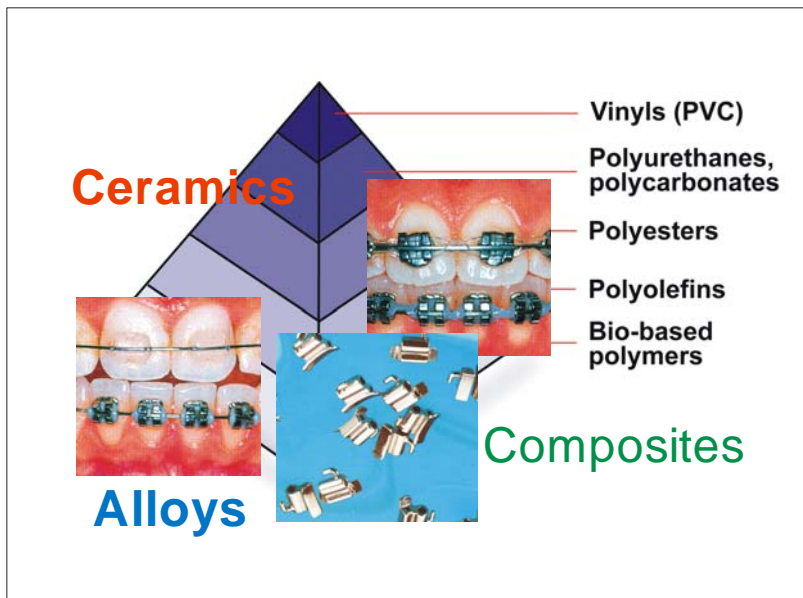
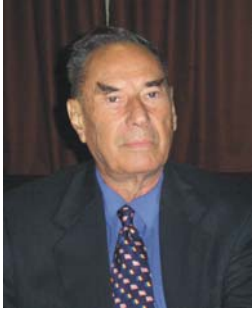


ORTHODONTIC BIOMATERIALS





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TEHNICA INFO Kishinev

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*"All substances are poisons.
There is none which is not poison.
The right dose differentiates a poison from remedy"*

Paracelsus, 1493-1541

A suggestive statistic:

2 Million chemicals are currently synthesized of these, 60,000 chemicals are in current use, 400 million tons are dispensed throughout the world yearly 2,000 new chemicals are launched each year. The increase in use of toxic heavy metals is constantly growing All chronic illnesses (cancer, arthritis, immune diseases, etc.) are steadily increasing every year Prior to 1780, there were no asthma. The breast cancer cases were in 1950, 1 in 50; in 1993, 1 in 9. The cancer cases were in 1975 -1993 as follows:

1. Increased cancer incident, 13%
2. 5 year survival unchanged
3. Death rate increase by 7%

(The Edelson Center for Environmental and Preventive Medicine, Atlanta)

PREFACE

Biomaterials have always been a challenging area for the orthodontic clinician; nevertheless, knowledge and understanding of biomaterials lays the foundation for sound clinical practice.

Notably, most of these orthodontic materials are different from those used by dentists. Even when the orthodontist has goals similar to those of a dentist, he very often encounters situations where the nature of the materials he uses may be different.

A case in point is the materials used for dental impressions: dentists use polyvinyl siloxanes and polyethers; orthodontists prefer alginates. Also unexpectedly, dental materials are well covered in the literature while orthodontic materials are not.

Claude G. Matăsă, a leading authority in the field of orthodontic biomaterials and Mihai Chiriță, the first romanian professor of biomaterials, presents an informative, must-read book on orthodontic biomaterials that helps the clinician understand the multiple aspects of physical and chemical properties.

Starting with basic concepts, (atoms, molecules, crystals, grains, lattices, polymorphism, twinning, transitions, phases and affinity, i.e. chemical bonding), he then concentrates most of the work on the potential iatrogenic effects of metals that are used in orthodontics, as well as their handling, biocompatibility, corrosion and degradation.

II

Organic polymers and inorganic polymers (ceramics), as well as composites, are given the same thorough, clinically oriented analysis, rendering the book an absolute must for the clinician.

Facing a wider array of attachments than ever, the orthodontist has to spend much of his time handling these, and the success or failure of his care may depend upon the correct choice of materials and their proper handling.

A shaky knowledge of the materials of his clinical practice may cost him a lot. Litigation hangs, like the sword of Damocles, over any clinician in most advanced, but at the same time, litigation prone countries.

Malpractice litigation has become a worldwide phenomenon and continues to grow: it is no mere coincidence that the U.S.A. has 5% of the world's population but 70% of the world's lawyers. In many countries, lawyers make, enforce, and adjudicate the laws.

This book generously covers these aspects, relating the properties and the handling of orthodontic materials to their function and their possible risks. It gives the orthodontist a fighting chance in a malpractice case, as ignorance would be skillfully exploited in front of a jury that is sympathetic to the poor patient and not to the wealthy doctor and the successful insurance company.

Take, for example, the famous case of the use of silicone gels for breast implants. In February 1992, the FDA restricted silicone in breast implants because of a presumed increased risk of autoimmune diseases in women who have had such implants. Despite the support of the medical profession, Dow Corning had to settle, paying out 2.5 billion dollars, an amount that, according to New York Times, was a result of greed, media sensationalism, judicial gullibility, and the cleverness of lawyers.

After many epidemiologic studies, it was confirmed that there was no evidence that silicone breast implants cause a lack of autoimmunity or generate diseases. On November 17, 2006, the FDA re-approved the silicone gel implants, the only difference being that manufacturers will have to conduct a large post-approval study. Interestingly, even after all these studies, most Americans (and many doctors) may answer "yes" if asked if

silicone breast implants cause, or are even associated with an increase in risk of autoimmune diseases.

As a result, insurance companies have become more cost conscious than ever, and some are even giving up insuring physicians, for whom the only viable alternative is to settle the suit rather than to fight it. A suit may be settled, but the results are filed with the National Practitioner Data Bank, and reputations may be tarnished for a long time to come.

The few, previous contributions in orthodontic biomaterials, have usually focused on the narrow fields of research of their respective authors and were characterized rather by dissertations on the philosophy of selected appliances, while paying inadequate attention to the practical application of these appliances and their attendant problems. In contrast, this book centers on how to safely choose the materials and answers the reason why; its pragmatism will be invaluable to both the neophyte and the experienced clinician alike.

A handwritten signature in black ink, appearing to read 'Tom Graber', with a stylized flourish at the end.

Thomas M. Graber, DMD, MSD, PhD, Odont Dr, DSc, SeD, MD, FDSRCS

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