Preface

Advances in Biomaterials for Oral Health

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Editors

The field of oral biomaterials continues to grow at a frantic pace, with the continual introduction of new products claiming important characteristics for improving oral health. Materials and technologies of extremely high quality are available to oral health care practitioners. In large part, the tremendous competition in the field essentially ensures that providers are supplied with excellent and appropriate tools to maintain the health of their patients. It is incumbent on these providers to be up-to-date with the latest developments, not only in terms of the various new products that have been introduced but also in terms of their ideal indications and the optimal ways for using them. It is for this reason that we have compiled this group of eleven outstanding articles from an internationally distinguished list of authors to provide an update and overview of oral biomaterials and technologies.

In the past, materials were developed for dentistry and oral health care with a primary focus on tissue replacement or augmentation, accompanied by minimal biological impact. The emphasis in many of the research and development initiatives today is on materials that are designed to interact with the biological environment to produce some beneficial effect, whether that be related to repairing or regenerating tissues or reducing or eliminating microbiological challenges. In addition, advances in digital imaging technology are greatly simplifying and facilitating many of the analog procedures used for many decades to create fixed and removable dental prostheses. Without a doubt, this is an exciting time to be an oral health care provider.

This issue is complete with articles addressing both traditional and new materials, but often looking at specific aspects related to their performance in the oral cavity and their interactions with biological tissues. For example, dental adhesives are addressed, but from the standpoint of how tooth surfaces may be modified to enhance bonding and make it more durable. These adhesives will be useful for the current and future generations of resin-based dental composites used in direct and indirect
restorations. Each of these resin-based materials is most frequently hardened with visible light-curing devices, but the professional must be aware of the potential blue light hazard when these devices are used. As discussed above, perhaps the new frontier in dental restoratives is “bioactive” materials, which is being designed for many different uses at this time. These materials have application in new restorative products, but also for modifying implant surfaces to minimize infection of the periodontium, as well as in active scaffolds for regenerating both periodontal and pulpal tissues. Advances in dental ceramics and the cements used to adhere them to teeth remain a critical and important mainstay of modern dentistry, as is the development of new technologies that facilitate the use of these materials. Finally, a look at the process by which standards are developed to assure the safety of dental products is presented.

This comprehensive set of articles will be helpful to clinical educators, practitioners, and researchers alike, who strive to have the most up-to-date information about the materials and systems available for providing optimal oral health care.

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