VIDEO ARTICLE

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Surface Texturing of Dental 3Y-TZP Ceramics

Jinyang Xu

Shanghai Jiao Tong University, China

Corresponding author: E-mail: xujinyang@sjtu.edu.cn
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Abstract

3 mol% yttria-stabilized tetragonal zirconia polycrystal (3Y-TZP) ceramics are promising restorative materials being extensively used for fabricating dental prosthodontics. The invited talk aims to report a novel method of surface texturing to improve the serving properties of 3Y-TZP ceramics. Different types of surface textures, including micro-honeycombs, micro-composite grids, and micro-grooves, were fabricated onto the zirconia specimens. The effects of different microtextures on surface behaviors, including wettability, bacteria adhesion, and wear behavior, of 3Y-TZP ceramics were rigorously studied. The results obtained can provide technical guidance for the design and application of microtextures in the restorative dental fields.

Biography

Jinyang Xu, MASME, MSCS, MIAAM, is an Associate Professor and a Doctoral Supervisor of Mechanical Engineering at Shanghai Jiao Tong University, China. He was awarded the Shanghai Pujiang Scholar by the Shanghai Municipality in 2017. He received his M.Sc. (2013) in Mechanical Manufacturing & Automation from Shanghai Jiao Tong University, China, and the Ph.D. (2016) in Mechanical Engineering from Arts et Métiers ParisTech, France. His research interests focus on composites machining, numerical modeling, micro/nano cutting, and surface texturing. He has published over 40 articles in highly ranked JCR-referenced journals as a first/corresponding author, co-authored more than 50 peer-reviewed papers, and edited 8 special issues, 1 monograph & 2 book chapters, being cited over 1700 times with an h-index of 22 according to the Google Scholar Citation database. He is now serving as the Editor-in-Chief of the Journal of Coating Science and Technology (JCST) and the International Journal of Product Sound Quality (IJPSQ). He is also an Associate Editor of Simulation - Transactions of the Society for Modeling and Simulation International (indexed by SCIE/EI), and the Academic Editors/Board Members of Green Materials (indexed by SCIE/EI), Journal of Superhard Materials (indexed by SCIE/EI), International Journal of Aerospace Engineering (indexed by SCIE/EI), Advances in Materials Science and Engineering (indexed by SCIE/EI), Coatings (indexed by SCIE/SCOPUS), Lubricants (indexed by SCIE/SCOPUS), Journal of Composites Science (indexed by ESCI/SCOPUS), Journal of Engineering (indexed by ESCI/SCOPUS), and Current Materials Science (indexed by EI/SCOPUS). Moreover, Dr. Xu is also acting as a scientific reviewer for more than 80 prestigious Web of Science journals, such as IJMTM, JMPT, IJAMT, IJMS, COST, WEAR, etc. He has been invited as Keynote/Invited Speaker, Section Chair, and TPC member for a number of international conferences (e.g., EM2022, MD2021, FAIM conference series, APMAS conference series, AMSE2021, etc.) with themes in materials science and manufacturing processes. He is the principal investigator of some national and provincial projects, including the NSFC grants, Shanghai Pujiang Talents Program, Shanghai Academy of Spaceflight

Technology projects, State Key Laboratory of Mechanical System and Vibration funds, as well as a number of industrial projects. For his notable research in the field of Materials Processing & Manufacturing, he was honored with the prestigious IAAM Scientist Medal of the year 2020 and received the Best Paper Awards at the CJUMP2017 (November 19-21, 2017, Shanghai, China) and the ISGMA2015 (June 23-27, 2015, Qingdao, China) conferences. He has been the recipient of several awards, including the Top Cited Author 2020-2021 in Polymer Composites (Wiley, 2022), the Outstanding Contribution in Reviewing Award (Elsevier, 2018, 2016), the CSC Government Scholarship (2013), the Excellent Master Thesis Award of Shanghai Municipality (2013), the Excellent Graduate Award of Shanghai Municipality (2013), and the National Graduate Scholarship of China (2012).

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