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Surface Passivation of ZrO2 Artificial Dentures by Magnetized Coaxial Plasma deposition SOYA ARAI, Graduate School of Science and Technology, Nihon University, SATOSHI KURUMI, KEN-ICHI MATSUDA, KAORU SUZUKI, College of Science and Technology, Nihon University, KATSUYA HARA, TATSUYA KATO, Graduate School of Science and Technology, Nihon University, TOMOHIKO ASAI, College of Science and Technology, Nihon University, HIDEHARU HIROSE, SHIGEYUKI MASUTANI, Nihon University School of Dentistry, NIHON UNIVERSITY TEAM — Recent growth and fabrication technologies for functional materials have been greatly contributed to drastic development of oral surgery field. Zirconia based ceramics is expected to utilize artificial dentures because these ceramics have good biocompatibility, high hardness and aesthetic attractively. However, to apply these ceramics to artificial dentures, this denture is removed from a dental plate because of weakly bond. For improving this problem, synthesis an Al passivation-layer on the ceramics for bonding with these dental items is suitable. In order to deposit the passivation layer, we focused on a magnetized coaxial plasma deposition (MCPD). The greatest characteristic of MCPD is that high-melting point metal can be deposited on various substrates. Additionally, adhesion force between substrate and films deposited by the MCPD is superior to it of general deposition methods. In this study, we have reported on the growth techniques of Al films on ZrO2 for contributing to oral surgery by the MCPD. Surface of deposited films shows there were some droplets and thickness of it is about 200 nm. Thickness is increased to 500 nm with increasing applied voltage.

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