

論文 / 著書情報
Article / Book Information

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Title(English)	Systematization of hybrid carbon films with high antimicrobial properties and mechanical properties
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学位種別(和文)	博士論文
Category(English)	Doctoral Thesis
種別(和文)	要約
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(博士課程)
Doctoral Program

論文概要

THESIS ABSTRACT

系・コース : Department of, Graduate major in	機械 機械	系 コース	申請学位 (専攻分野) : Academic Degree Requested	博士 Doctor of	(工学)
学籍番号 : Student ID Number			指導教員 (主) : Academic Supervisor(main)		大竹 尚登
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論文題目 Thesis Title	Systematization of hybrid carbon films with high antimicrobial properties and mechanical properties
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概要 (和文 300 字程度又は英文 120 語程度)

Thesis Abstract (approx.300 Japanese Characters or approx.120 English Words)

Diamond-like carbon (DLC) films had been formed as a surface treatment for medical devices for decreasing the coefficient of friction and light reflection. However, DLC has no significant effect on inhibiting biofilm attachment. Consequently, surface treatments are necessary to enhance the mechanical and antimicrobial properties of medical devices. This study demonstrated the preparation of hybrid DLC films, which incorporated Cu or TiO₂ with several approaches. The films were deposited on Si substrates via plasma-enhanced chemical vapor deposition, vacuum arc deposition and magnetron sputtering. The segmented structure was employed to address the issue of target contamination that arises with the incorporation of copper via different sizes of tungsten mesh. The surface morphology, microstructure, element distribution, wear resistance, hardness, and antimicrobial properties of the films were experimentally analyzed.