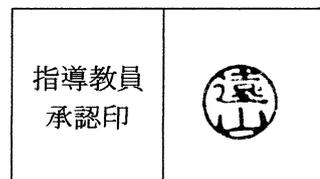


(様式 5)



2018 年 11 月 28 日  
Year Month Day

## 学位（博士）論文要旨

(Doctoral thesis abstract)

論文提出者 (Ph. D. candidate)	工学府博士後期課程 機械システム工学 専攻 (major) 平成 28 年度入学 (Admission year) 学籍番号 16833704 氏名 王 富林 印  (student ID No.) (Name) (Seal)
主指導教員氏名 (Name of supervisor)	遠山 茂樹
論文題目 (Title)	Fundamental Study of Coronary Angioscopy using Spherical Ultrasonic Motor
論文要旨 (2000 字程度) (Abstract(400 words)) ※欧文・和文どちらでもよい。但し、和文の場合は英訳を付すこと。 (in English or in Japanese) <p>In this study, a new coronary angioscopy with a miniature motor used to adjust the direction of a coronary angioscopic camera is aimed to develop. The coronary angioscopy is, however, very small in diameter, so it is difficult to mount a general actuator. So that, the camera cannot be driven in any direction. Therefore, there are problems that the lesion in the blood vessel can be contained in the center of the image and cannot be observed from the front.</p> <p>On the other hand, the lesion on the inner wall surface of the blood vessel can be contained in the center of the image by driving a miniature motor in a new coronary angioscopy. In this study, a miniature spherical ultrasonic motor using wire stators suitable for miniaturization is being developed. A wire is used as a stator to realize miniaturization of a motor, so it is called miniature spherical ultrasonic motor using wire stators. This new motor using wire stators has two degree of freedom for drive. For development of the new motor, acquisition of basic characteristics and establishment of control method are aimed. Moreover, the waveguide and the holding method mounted on the coronary angioscopy are also discussed. Finally, perspective of a new coronary angioscopy is described.</p> <p>This paper consists of seven chapters. The outline of each chapter is described below.</p> <p>In Chapter 1, the method of intravascular examination actually being practiced is briefly described, and the problems of coronary angioscopy and the purpose of this study are shown.</p>	

In Chapter 2, driving principle of a miniature spherical ultrasonic motor using wire stators is described.

In Chapter 3, the experiments of a miniature spherical ultrasonic motor using wire stators using a spherical rotor of 15 mm diameter.

In Chapter 4, the control method of a miniature spherical ultrasonic motor using wire stators is discussed.

In Chapter 5, the transient response analysis by the finite element method is performed for a 2 m waveguide by assuming the introduction to a coronary angioscopy, and the decreasing rate of input amplitude due to the influence of waveguide is discussed.

In Chapter 6, the transient response analysis by the finite element method is performed for the model of wire stator with support structure, and the influence of attenuation due to structure and vibration direction is described.

In Chapter 7, the results of this study are described.

(英訳) ※和文要旨の場合(400 words)