Optical Sectional Imaging for Tissues and 3D Scattering Media

Professor Manabu Sato

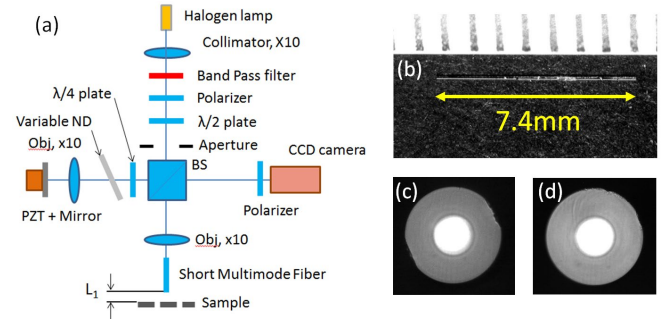

Fig.1 (a) OCT system, (b) Ultrathin imaging probe.

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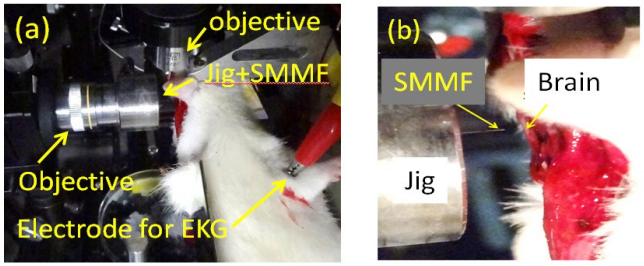

Fig.2 (a) Imaging probe(SMMF) and *in vivo* rat brain.

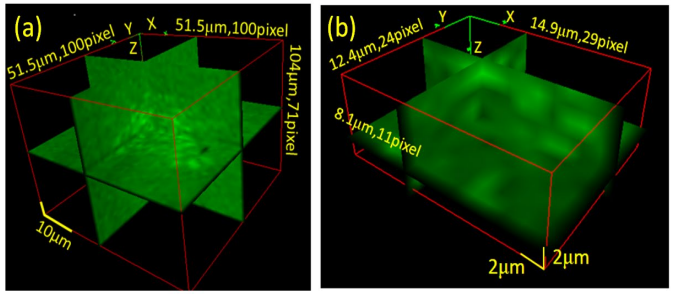

Fig.3 (a) 3D sectional images and (b) its expanded area.

Content:

Optical coherence tomography (OCT) to measure sectional images of biological tissues has been invented at Yamagata University at 1990*. OCT has advantages such as a high spatial resolution around 10 micron and non-invasions. OCT has been already used in the ophthalmology and its applications are spreading clinically including the field of general industries. At present main our subjects are as below.

1. Optical sectional imaging at deeper area

We are developing ultrathin imaging probe using optical fiber for optical communications. We have already reported the *in vivo* rat brain sectional images of nerve fibers shown in Fig.1-3. We call it short multimode fiber(SMMF) of diameter 125μm and length 7.4mm. The information of spatial arrangements and density could be obtained. This would be useful to study on functions of brain and to develop new medicines.

2. New techniques and application of optical measurement.

We are interested in developing new techniques and application using signal processing and optoelectronics devices.

Appealing points: Please join us.

* N. Tanno, T. Ichimura and A. Saeki, Japanese Patent, No.2010042 (1990)

Yamagata University, Graduate School of Science and Engineering

Research Interest : Optical imaging

E-mail : msato@yz.yamagata-u.ac.jp

Tel &Fax : +81-238-26-3187

HP : http://msatolab.yz.yamagata-u.ac.jp/