Innovative medical systems utilizing phenomena in the extended nanospace

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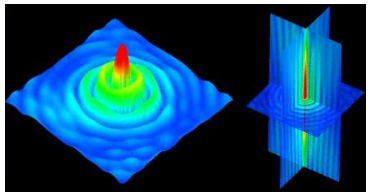
Realization of innovative medical systems through a medical robotic system utilizing nano and microscale phenomena and a new design synthesis method.

Microbubble-Assisted High Intensity Focused Ultrasound (HIFU) System

HIFU focal point

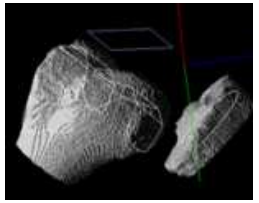


・J. Seo et al., *IEEE Trans. Ultrason. Ferroelectr.*, 57 (4): 883-891, (2010).

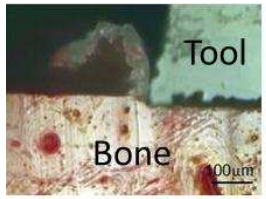
Y. Matsumoto

Surgical robotic system for orthopedic applications with biocompatibility

Navigation



Cutting phenomena and cutting tools



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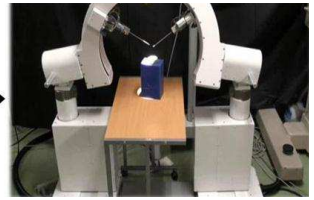
・N. Sugita et al., *IEEE/ASME Trans. Mechatron.*, 15(3): 471-479 (2010)

Robotic system for ultrafine microsurgery

Master manipulators

Surgical robots



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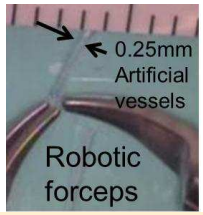
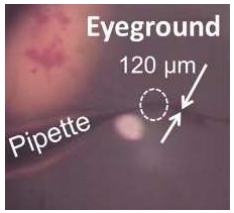
Neurosurgery *(in-vitro)*



Intraocular surgery *(in-vitro)*



・T.Ueta et al., *Ophthalmology*, 118 (8): 1538-1543 (2009).
・A.Morita et al., *J Neurosurg*, 103: 320-327 (2005).

Medical microrobots

S. Ishihara

N. Sugita
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Tottori et al., submitted.

Tele-surgical robotic system

Master manipulators

Internet

Surgical robots

・M. Mitsuishi et al., *IEEE/ASME Trans. Mechatron.*,12(4): 447- 454 (2007).
・J. Arata et al., *IEEE Int. Conf. Robotics and Automation*, pp.953–959 (2007).

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