

OR in the 21st Century; MRI and Surgical Assist Robot

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Surgical assist robot systems that cooperatively work with magnetic resonance imaging (MRI) are under development for clinical applications. We proved that robot motion and imaging could be done simultaneously without any adverse effects. This work is a collaboration with Brigham and Women's Hospital (Boston, MA). We also cooperate with Tokyo Women's Medical University on their 'intelligent' operating theatre that equips an open MRI in the operating room (OR). An MR compatible surgical endoscope was developed and the prototype model demonstrated excellent low noise images compared to ordinary endoscopes. By integrating robotics and endoscopic technology into intraoperative MRI, we aim to illustrate the ORs in the 21st century.

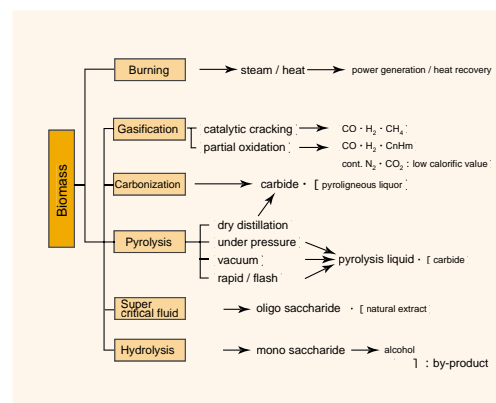


MR compatible surgical robot attached to an intraoperative MR scanner.
It was the world's first fully MR compatible surgical robot.

Thermal Conversion of Biomass Resources by New Microwave Method

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A new pyrolysis method, namely microwave pyrolysis, for biomass resources has been developed by National Institute of Advanced Industrial Science and Technology (AIST) Hokkaido. The materials were found to be pyrolyzed within a short irradiation time and transformed into useful materials such as anhydro-sugars (levoglucosan), pyrolysis liquid and charcoal.



Outline thermochemical biomass conversion technology