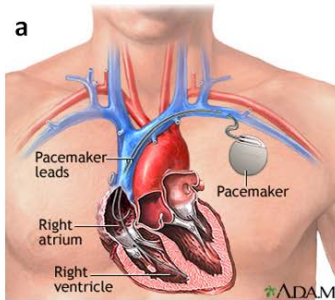


Design and fabrication of 3D electrode for pacemaker

Master Project / Semester Project

(Section: microengineering, biomedical engineering)

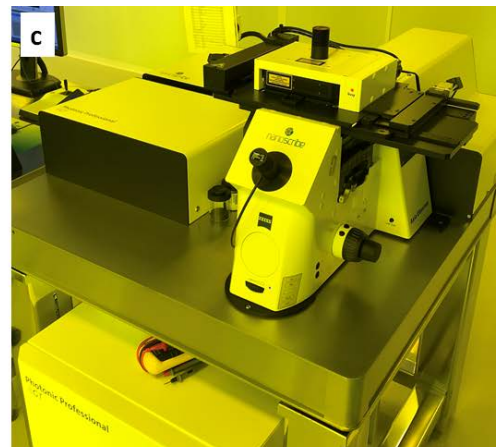
A pacemaker is a surgically implantable electronic device that stimulates the heart muscle to maintain an adequate heartbeat. In the pacemaker, the electrode is designed to be fixed in the heart tissue to deliver electrical pulses. The state-of-the-art electrode (active-type) has a helix structure with TiN coated. Recent studies have been focused on developing structure that can fix the electrode with minimizing the foreign body reaction. In this project, we will design and fabricate a novel pacemaker electrode using 3D lithography equipment. Its biological properties also will be characterized in near future.



Pacemaker application



**3D structure of electrode
(Ref: Medtronic Inc.)**



Nanoscribe GT, 3D LASER Writer

Work description:

- Design of the 3D pacemaker electrode using 3D CAD
- Fabrication of the 3D electrode using 3D laser writing (Nanoscribe)
- Electrochemical characterization

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