[바이오메디컬 뉴럴인터페이스]

초청연사 1	
	배준성 교수 (강원대 전기전자공학과)
제 목	A wireless neurostimualtor using body-coupled link for multisite stimulation in freely behaving animals
요약문	This paper presents a wireless neurostimulator for multisite stimulation in freely behaving animals. The neurostimulator IC is wirelessly powered via a 16MHz body-coupled link, and controlled by forward telemetry, which provides stimulation parameters via amplitude shift keying (ASK) modulation. It can provide various stimulation protocols with a maximum current of 225μA, achieving the highest end-to-end efficiency of 1.72% at a TX/RX distance of 10cm. Moreover, multisite stimulation is fully validated through in vivo experiments.
초청연사 2	
	이상민 교수 (경희대학교 생체의공학과)
제 목	Top-down fabrication of vertically/horizontally-arrayed photon-triggered silicon-nanowire transistors and its application on integrated high-resolution neural stimulation electrode
요약문	Method to restore vision for blinds have been researched since the 1970's. In 1988, it was reported that the inner nuclear and ganglion cell layers survive at fairly high rates in patients with retinal degenerative diseases even after a near-total loss of the macular photoreceptors. Several research groups of medical doctors, engineers and scientists from worldwide have been developing various types of retinal prosthetic devices for more than twenty years. Among those approaches, electrical retinal

	stimulation showed the most promising results for restoring vision. Recently, some clinical results of electrical stimulation method have shown partially successful vision restoration in patients with retinal degeneration. However, many issues still remain to be investigated before the practical use of the retinal prostheses. Especially, to achieve tasks such as facial-recognition or reading, a high resolution of visual data is required. It is reported that at least 1,000 pixels need to be integrated in the restricted area of 5 mm × 5 mm in a retina for patients to experience useful activities, such as navigating a room. While some results show successful implementation of high-resolution MEAs, challenges such as wiring complexity and device flexibility still remains as issues to be resolved. In this seminar, a silicon nanowire based high-resolution microelectrode for minimizing the wiring complexity without compromising device flexibility will be shown. Also, recent development of silicon nanowire integrated microelectrode will be discussed for applications in retinal prostheses.