Hearing aids given nanotech spin

By R. Colin Johnson
Portland, Ore. — Nanotech hearing aids due out next month will carry spintronic sensors that automatically adjust to accommodate the source of sounds. If a phone is held to the wearer’s ear, for example, the hearing aid will automatically switch modes without the person’s intervention.

Giant magnetoresistance (GMR) sensors from NVE Corp. (Eden Prairie, Minn.) are at the heart of the hearing aids, built by Starkey Laboratories (Minneapolis).

NVE’s first medical electronics customer was St. Jude Medical Inc. in Minneapolis. Doctors there use NVE’s technology to poll pacemakers and defibrillators implanted in patients. With nano-scale spintronics, the NVE sensor allows noninvasive high-speed communication between a doctor’s computer and the implanted device. Not only can a patient’s medical history file be kept current with data downloads from the device, but new functionality can be uploaded to the implant without having to remove it.

But it took NVE almost five years to obtain U.S. Food and Drug Administration approval for the device, prompting the company to target medical devices not critical to life support, such as hearing aids, which will likely win FDA approval far more quickly. “We are very proud of our success with the St. Jude Medical implants, but because we are still a small [70-employee] company, we now want to target medical applications with shorter approval cycles,” Baker said.

NVE was founded in 1989 with technology licensed from Honeywell International. More than $40 million in government research contracts have kept NVE working at nanoscale spintronics. For the military, for instance, NVE has designed MRAMs as well as sensors for land-mine detection and other security applications.

In October 2004, NVE began delivering more than $100,000 worth of GMR-based chips to Starkey. While the chips could eventually be used in all of Starkey’s hearing aids, initially they will be rolled out next month as an option for specific models.