Electrophysiology cardiologists who specialize in heart rhythm disorders soon may be able to place sensitive electronics inside their patients’ hearts with less invasiveness, enabling more sophisticated and efficient diagnosis and treatment of arrhythmias.

Electrophysiologists often use multiple catheters for mapping arrhythmia patterns in the heart—often in a point-by-point fashion as the catheter is maneuvered in search of irregularities. They then use a specialized ablation catheter to cauterize the site where the arrhythmia originates.

“The new catheter is all in one, so it maps and zaps,” says John A. Rogers, PhD, a professor of materials science and engineering at the University of Illinois, who led a research team that included Marvin Slepian, MD, of the UA Sarver Heart Center. He worked with other cardiologists to determine features that would be most useful for patient care. For example, the researchers added temperature sensors and mapped temperature distribution on actual tissue as areas were ablated. “Adding such a feature gives us greater insight as to what we are actually doing to the tissue,” said co-author Dr. Slepian. “This will enhance the safety and effectiveness of ablation catheters, providing a new level of precision that we have not had to date.”