Ideas Into Products.
Products Into Production.

US Navy Patuxent River Naval Air Station: The objective of this program was to provide the Navy with the previously unavailable capability to unobtrusively and accurately instrument the ear canal of pilots, divers and aircrewmen with wireless miniature pressure sensors attached to COTS earplugs. A prototype pressure-sensor-integrated earplug was designed, fabricated and tested under laboratory conditions. A combination of finite element modeling and bench-top measurements validated the sensor system, and yielded insights into the biological system under study. A fully wireless readout circuit was also developed, demonstrating the potential for miniaturization into a fully wireless microsystem. In addition, a technical and system-level study was carried out, looking into the feasibility of applying this technology to the much more general problem of providing instantaneous physiological monitoring of pilots, divers, first responders, special forces, and others working under hazardous conditions in the field.

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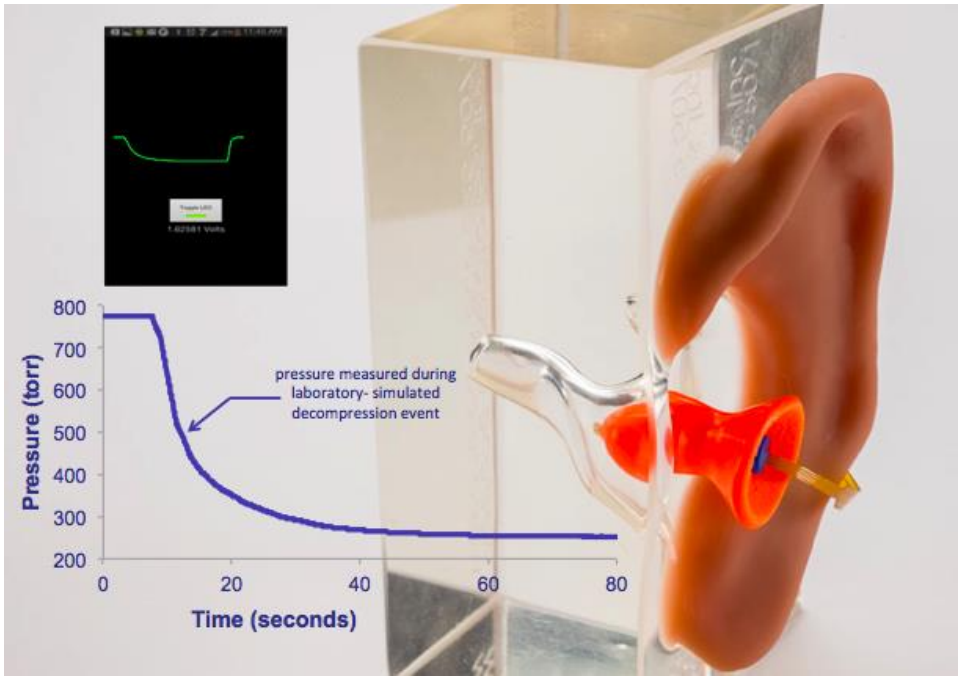

Figure 1: Prototype COTS earplug with custom integrated sensors. Data and inset show data collected from an experimental trial simulating a pilot subjected to explosive decompression.