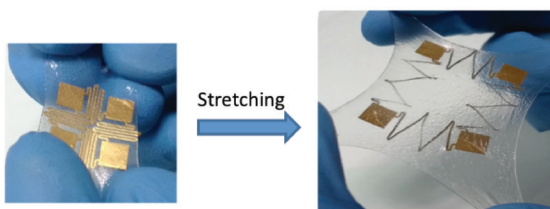


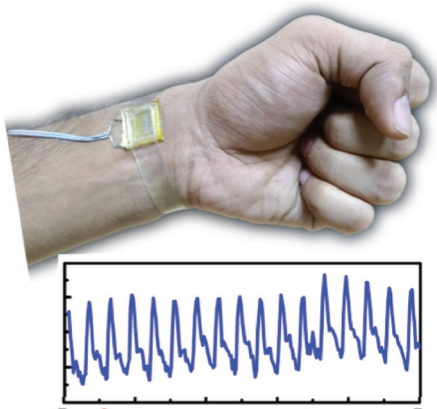
Flexible electronics: Electronics that can bend, flex, stretch or fold



Flexible mobile phone from Philips



Stretchable electronic devices we developed



A very thin and highly sensitive pulse sensor we developed.

Imagine that you can wrap your mobile phone around your wrist or rollout a screen from it so that you can watch full colour television, a movie, read a book or a newspaper. Imagine a portable rolled out television that can be stuck on the window like a wallpaper or a solar cell panel that you can carry in a foldable format during your next hiking on the Himalayas. Even more, you can have a tattoo applied on any part of your body that can continuously measure your blood pressure, heart rate, glucose level, perform ECG or deliver the drug as an when required. All these are no more dreams.

All over the globe, researchers and industries are working hard to realise electronic devices that can flex, roll or bend giving rise to an electronics era, which is popularly called 'Flexible electronics'. Flexible electronic devices are very different in their format and applications and will transform the way we make and use electronic devices. The materials used here are soft in nature, for eg. conducting polymers, unlike hard and brittle silicon in conventional electronics.

At the Plastic Electronics and Energy Laboratory in IIT Bombay, we are working on realising *flexible* and *stretchable* electronic devices for applications like energy harvesting, biomedical sensors and displays. We explore a range of materials including conducting polymers, metal oxides, metal nanoparticles, carbon nanomaterials etc to fabricate devices such as thin film transistors (TFT), solar cells and sensors. We perform extensive engineering on the materials and processes so that their electrical performance remains intact on repeated flexing, bending and stretching. Furthermore, we focus on developing processes that are cost effective, energy efficient and has the potential for large scale manufacturing such as printing.