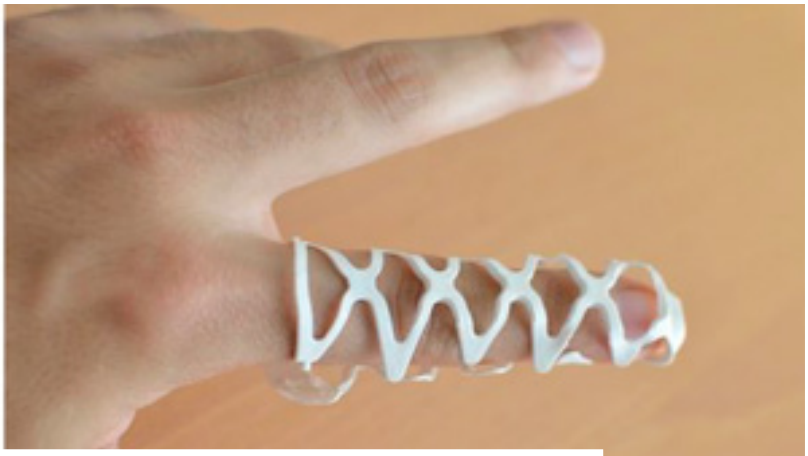


Research Cluster: Make – exploring innovative approaches to the ideation of artefacts and spaces | Timespan: 2017 - ongoing

Sustainable Smart Parasites, SPP

Team

PI: Paolo Lugli

CI: Nitzan Cohen

Team: Dr. Giuseppe Cantarella, Ignacio Merin

More information: design-art@unibz.it

Last update: 08/08/2018

Over the last decade the idea of "connectivity" and all its deeper implications popped up bringing a range of unprecedented opportunity to reinterpretate the surrounding of modernity. Interconnected devices are redefining the paradigms of interaction between human beings and their bodies, the object they own and the space they belong to. The human body, traditional objects and the space, however, are not inherently interconnected and necessitate of an "extension", in order to enhance their functionalities. Since such extensions have a meaning and a function only when attached to the object they need to enhance, they can also be defined "parasites". The evolution of parasites towards a different class of technology-enabled objects or smart parasites is inevitable, but carries a series of criticalities, which have not been entirely addressed so far by the scientific community, one of the most significant is related to the sustainability.

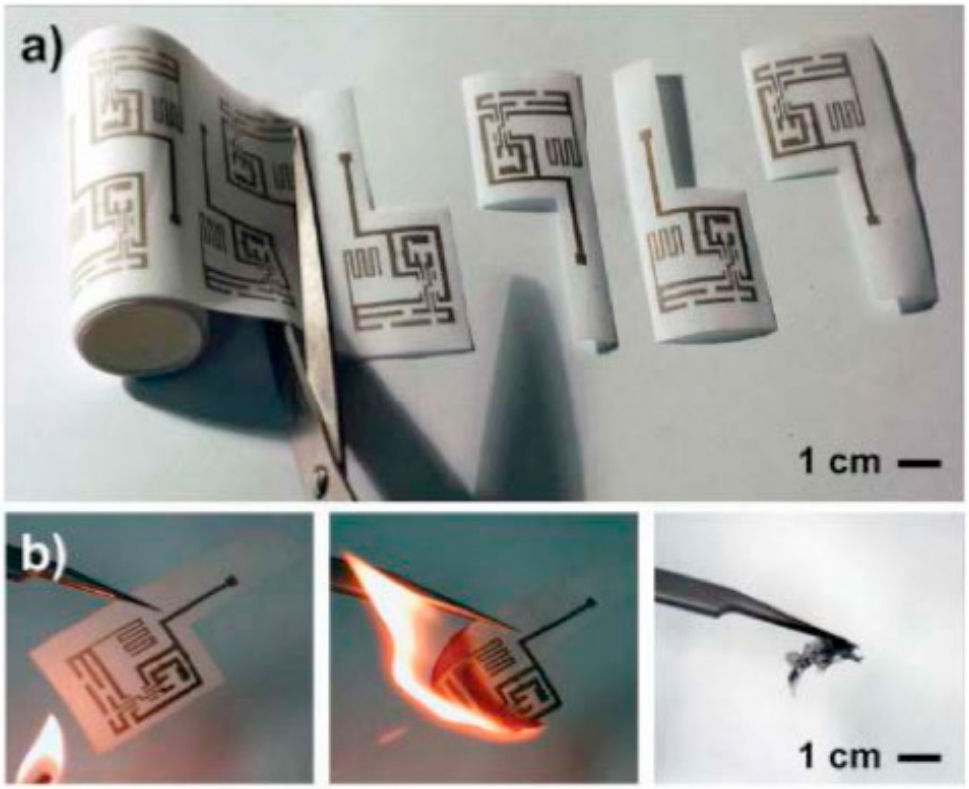


Figure 1. Paper printed circuit: (a) The circuit is trimmed and shaped with scissors, (b)after printing a conducive ink, the properties of the substrate are not subject to physical change.

The task currently developed in SSP is the definition of new methods and tools for the design and the production of smart parasites that are environmentally friendly, energy conscious, with low carbon footprint and cheap to produce. To pursue this goal, we exploit the recent advances in printed electronics and ad-hoc manufacturing, in order to obtain arbitrarily shaped devices with enhanced electronic functions. By employing a design driven approach, with a strong synergy between design and technology experts, we are facing three ambitious goals.

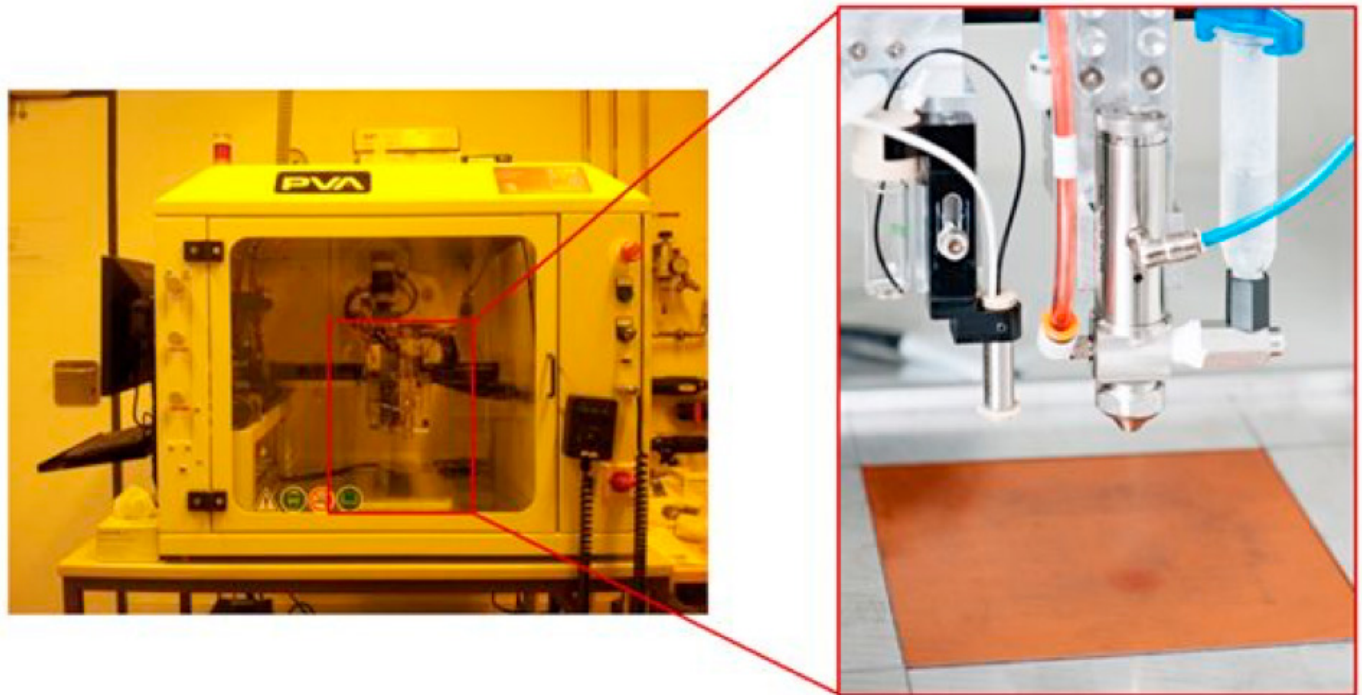
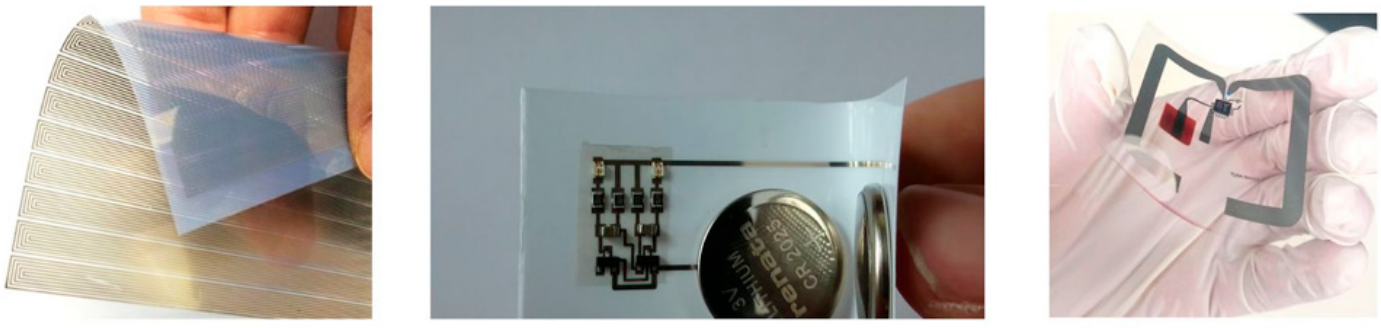


Figure 2 . Benchtop automated spray deposition setup provided with a LVLP deposition gun



(a) (b) (c)

Figure 3. (a) conductive lines printed on plastic foil with modified Epson printer, (b) A flexible circuit printed on paper, (c) RFID tag with light sensing capabilities.

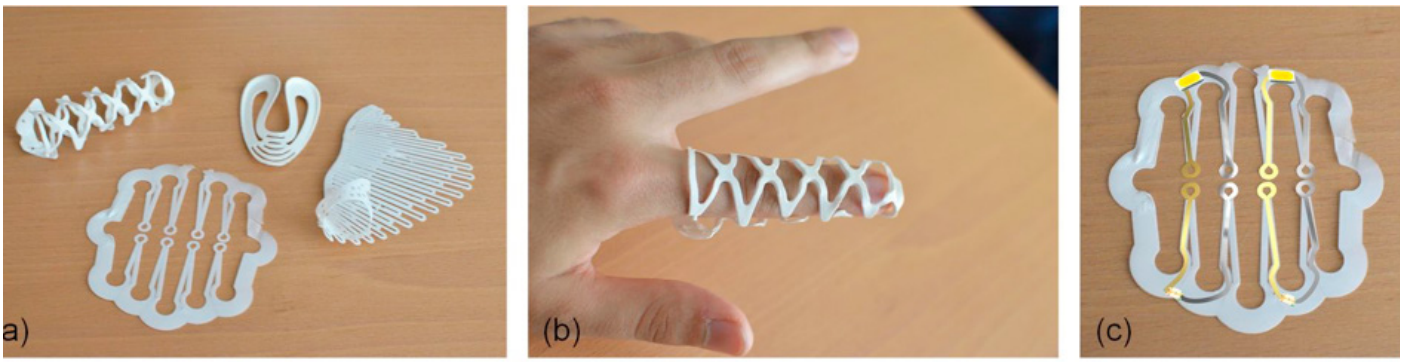


Figure 4. (a) Different 3D printed objects. The objects were printed as a two-dimensional surface and reshaped with heat in order to assume a three-dimensional form. (b) Such 3D printed objects can be easily designed to be conformal to the human body (c) Computer rendering of a printed circuit on a 3D printed surface