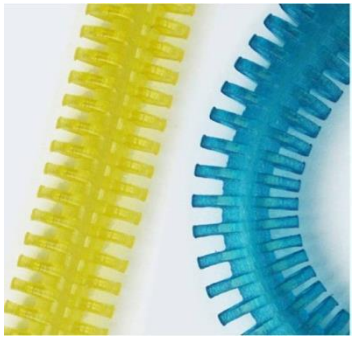


Peter Walters

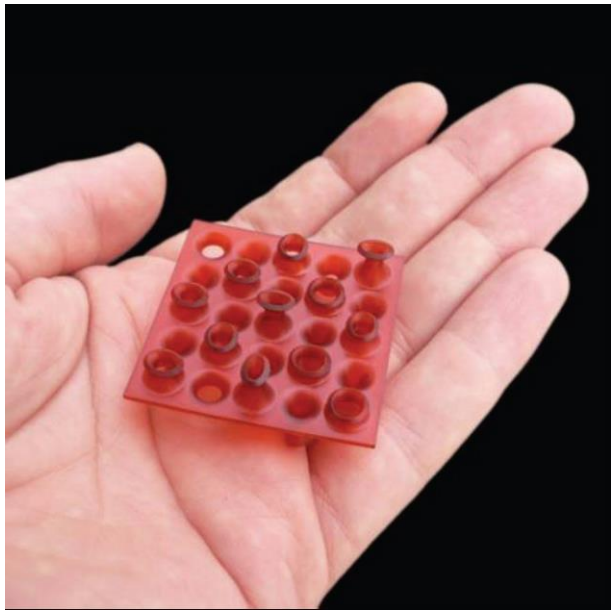
Smart materials and novel actuators: Creative applications in art and design

Centre for Fine Print Research,
University of the West of England

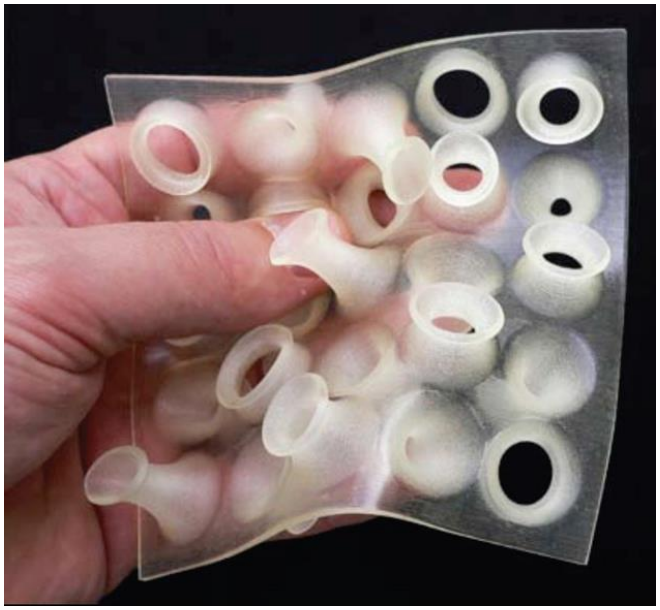
Centre for Fine Print Research,
3D printing in the visual arts and design

Trumpet Tiles and Trumpet Spheres (2009)
Peter Walters. Form and Colour Studies –
Z-Corp 3D Prints

3D Virtual to 3D Physical >> Digital Fabrication



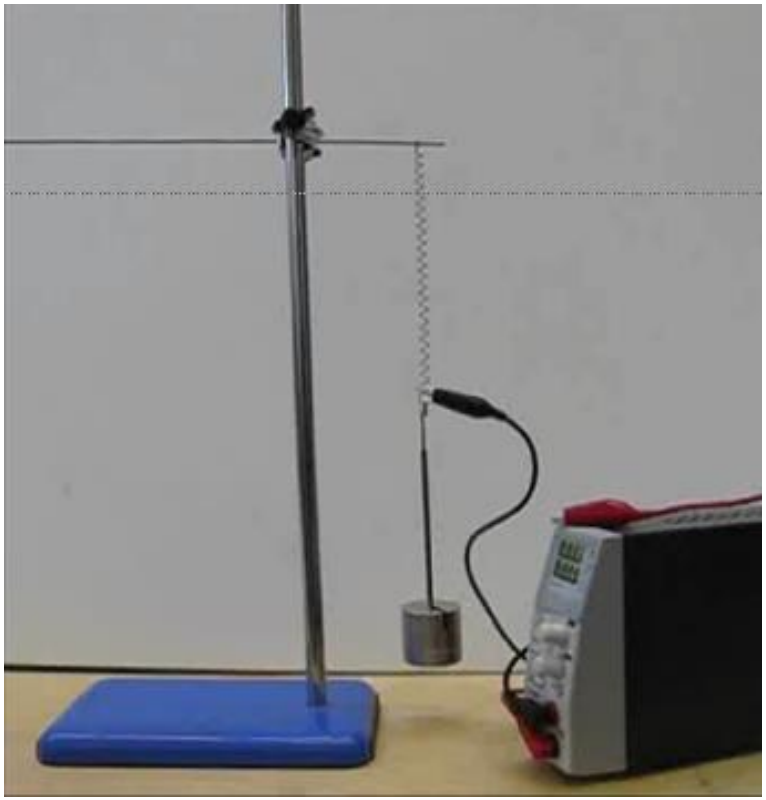
Photopolymer model made using the EnvisionTEC Perfactory rapid prototyping system

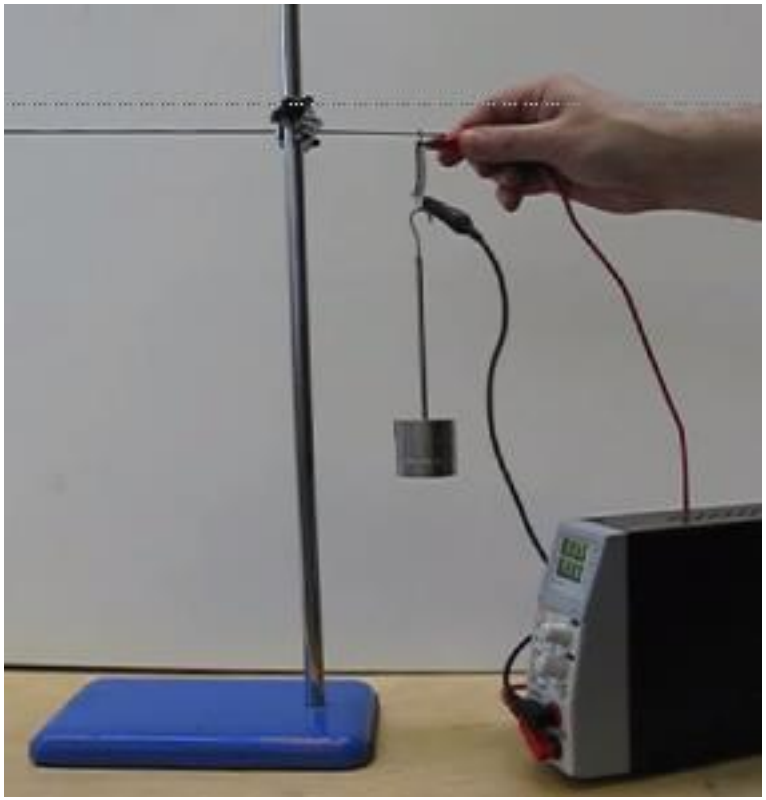


Photopolymer model made using the Objet Geometries PolyJet 3D printing system TangoPlus rubber-like resin

3D printing and smart materials
UWE early career grant

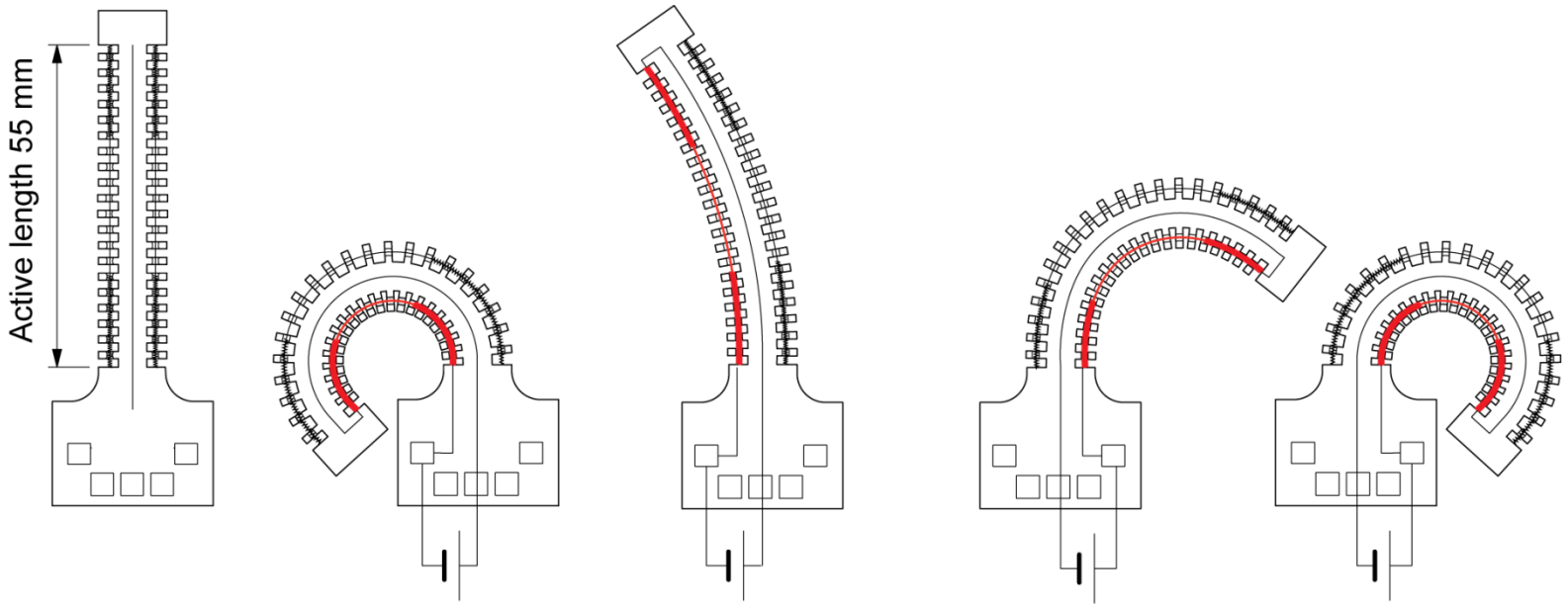
Peter Walters, and David McGoran





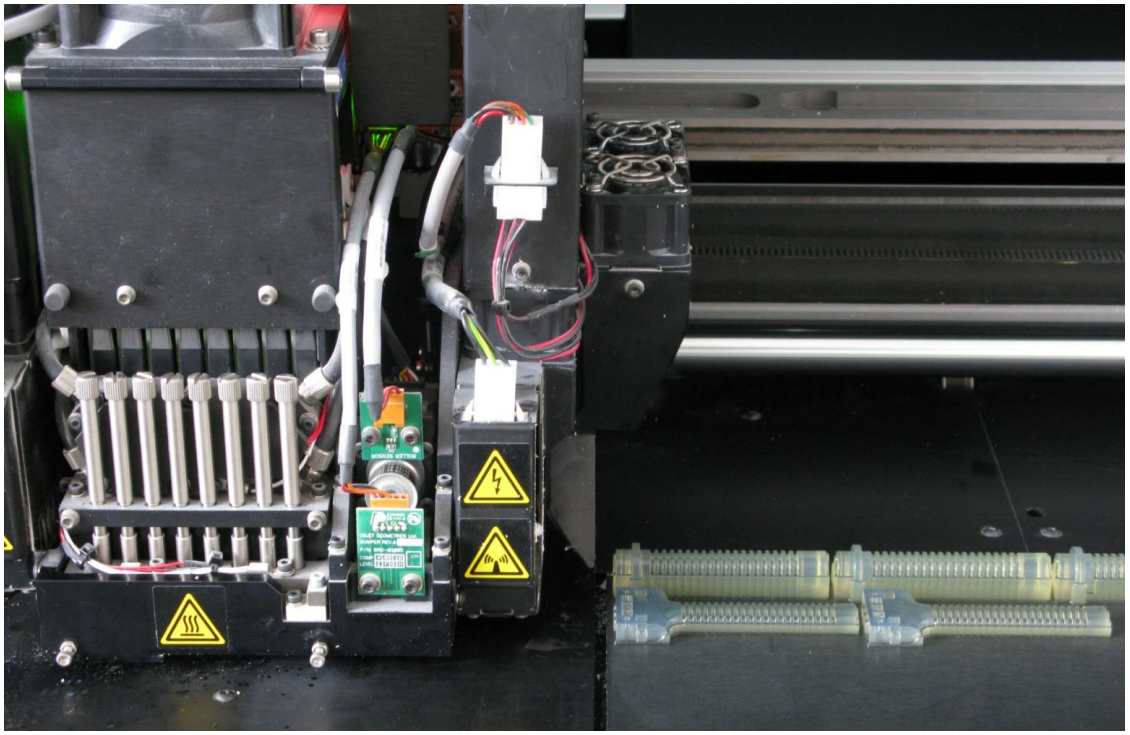
Ni Ti Shape memory alloy artificial muscle

Helical structure contracts when heated by electric current



3D printed tentacle-like active structure

Toki Biometal Helix actuator contracts like a muscle when heated electrically

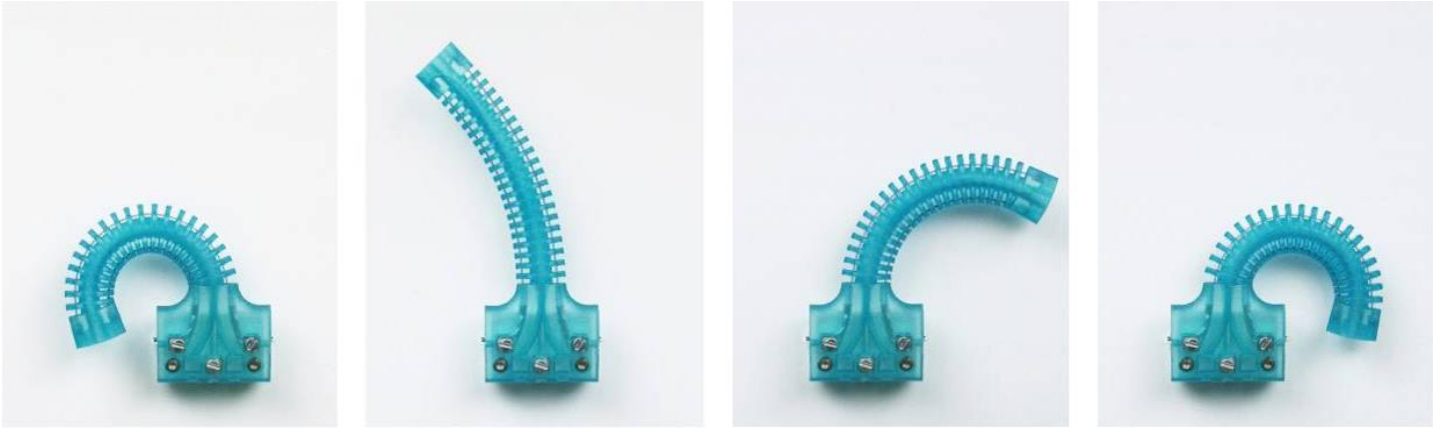


3D printing tentacle structures

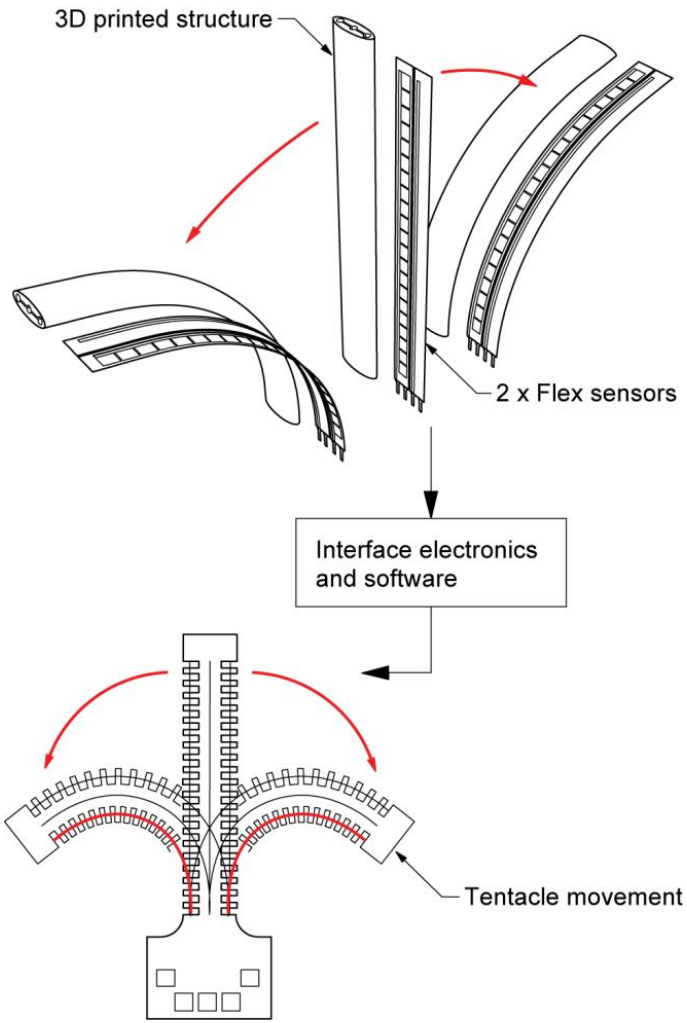
Objet Geometries EDEN 350 V

Tango Plus uv-cure elastomer

3D printed soft rubber-like structures

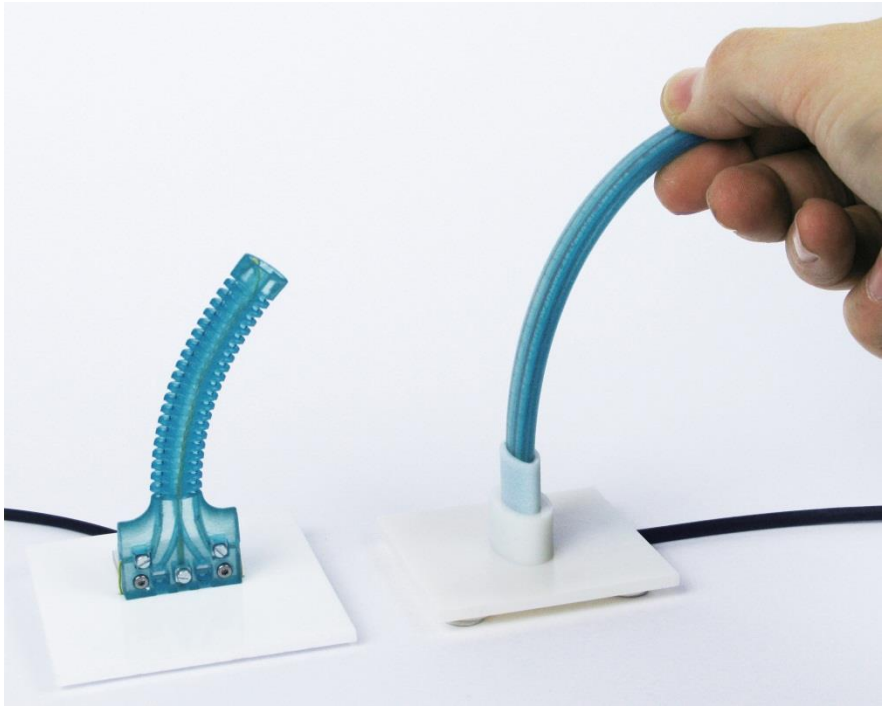


3D printed tentacle structure
NiTi actuation – Biometal Helix



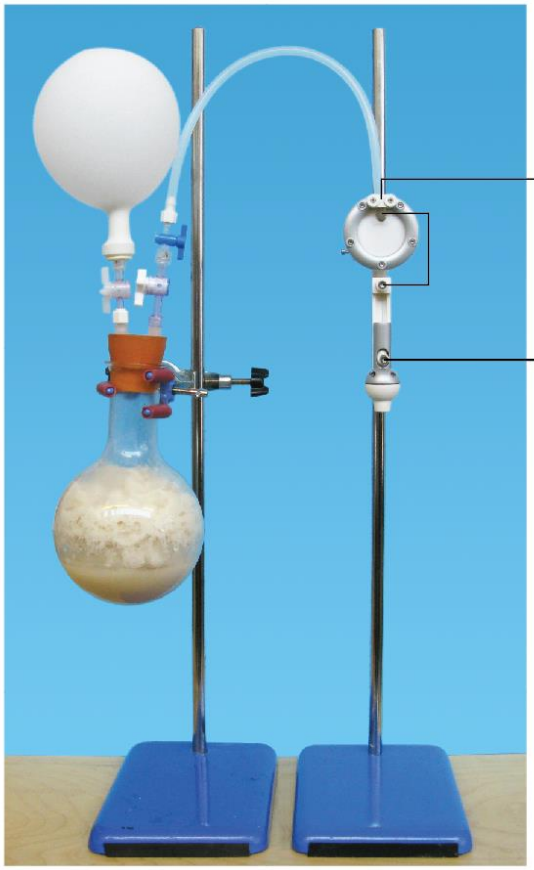
Tentacle “smart puppet” with flex sensor control

2 x resistive flex sensors, Arduino microcontroller,
dual MOSFET driver, open loop control

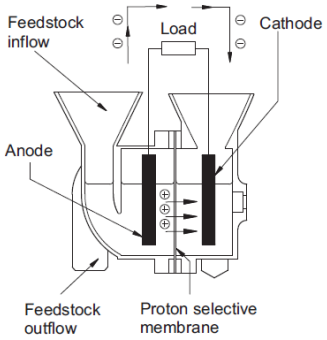


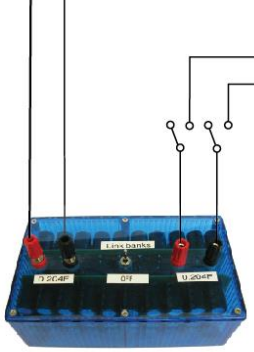
Tentacle “smart puppet” with flex sensor control

Bioreactor

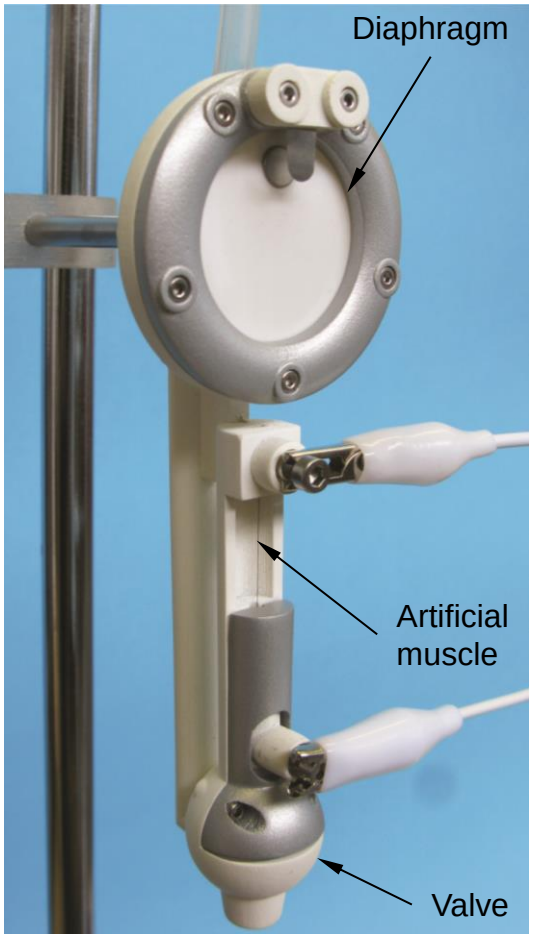


EcoBot
48 x microbial fuel cells





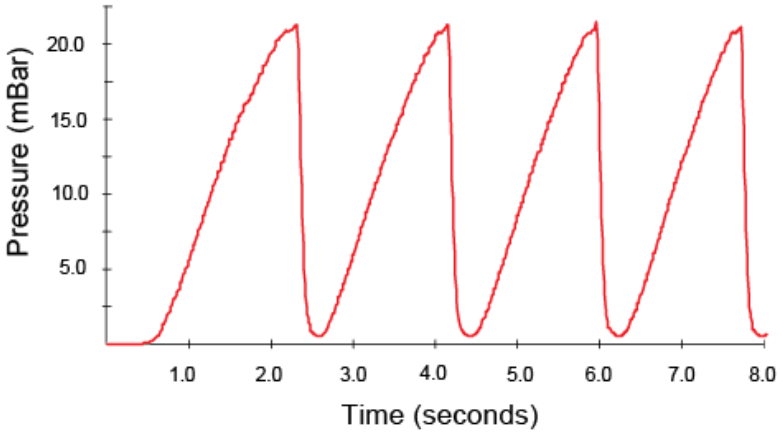
Capacitor bank



Artificial heartbeat

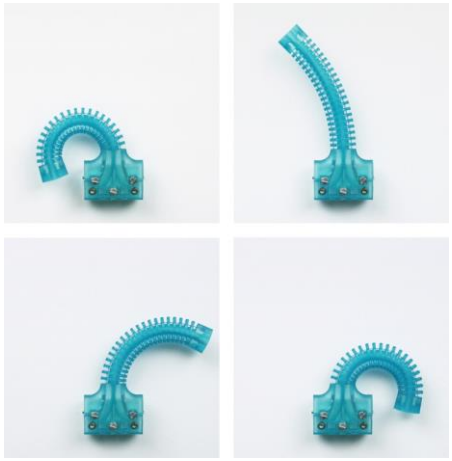
Biologically-driven actuation - yeast and microbial fuel cells

With Dr Ioannis Ieropoulos, Bristol Robotics Laboratory



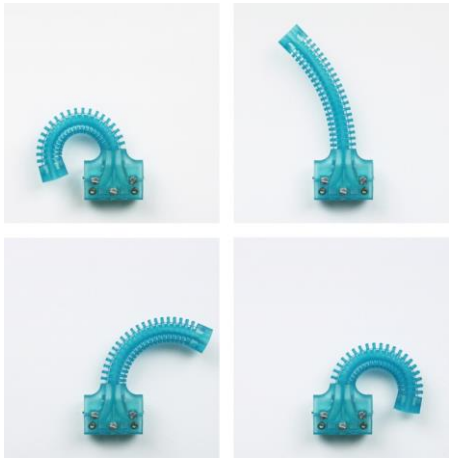
"3D-printed cyborg muscle produces artificial heartbeat"

Sandrine Ceurstemont, **New Scientist TV**, 21 Feb 2013



Thank you!

Peter2.Walters@uwe.ac.uk



Digital Fabrication of "Smart" Structures and Mechanisms: Creative Applications in Art and Design
Walters, Peter and McGoran, David, IS&T Digital Fabrication, Minneapolis 2011

Digital Fabrication of a Novel Bio-Actuator for Bio-Robotic Art and Design
Walters, P., Ieropoulos, I., McGoran, D., IS&T Digital Fabrication, Minneapolis 2011

3D Printing for Artists: Research and Creative Practice
Walters, P. and Davies, K. (2010) Rapport #1, 2010