

CIRMM/LIMMS

BJ KIM LAB.

[Micro Components & Systems]

Centre for Interdisciplinary Research on Micro-Nano Methods

NEMS, Bio-MEMS/Flexible Microsensors

Precision Engineering Department

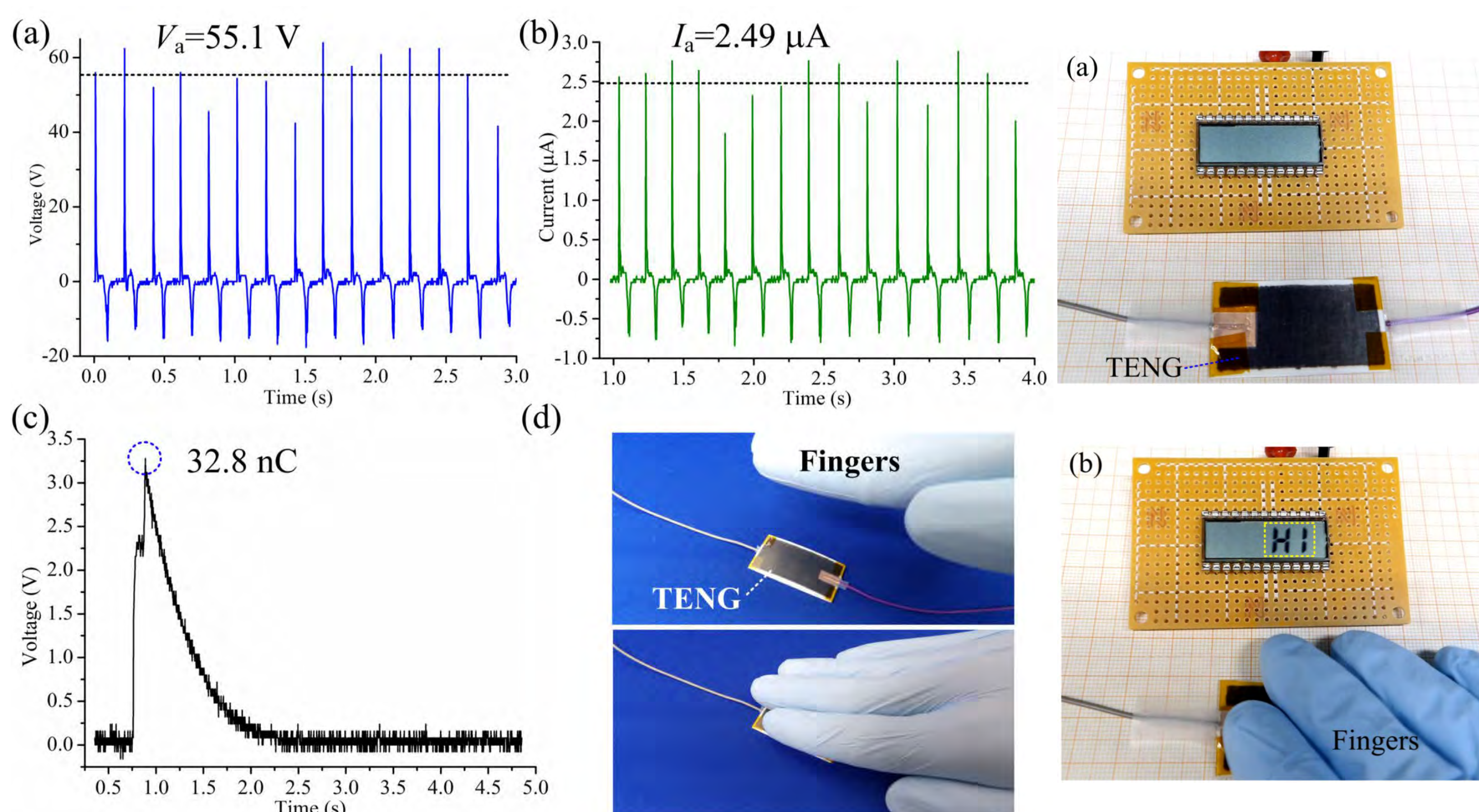
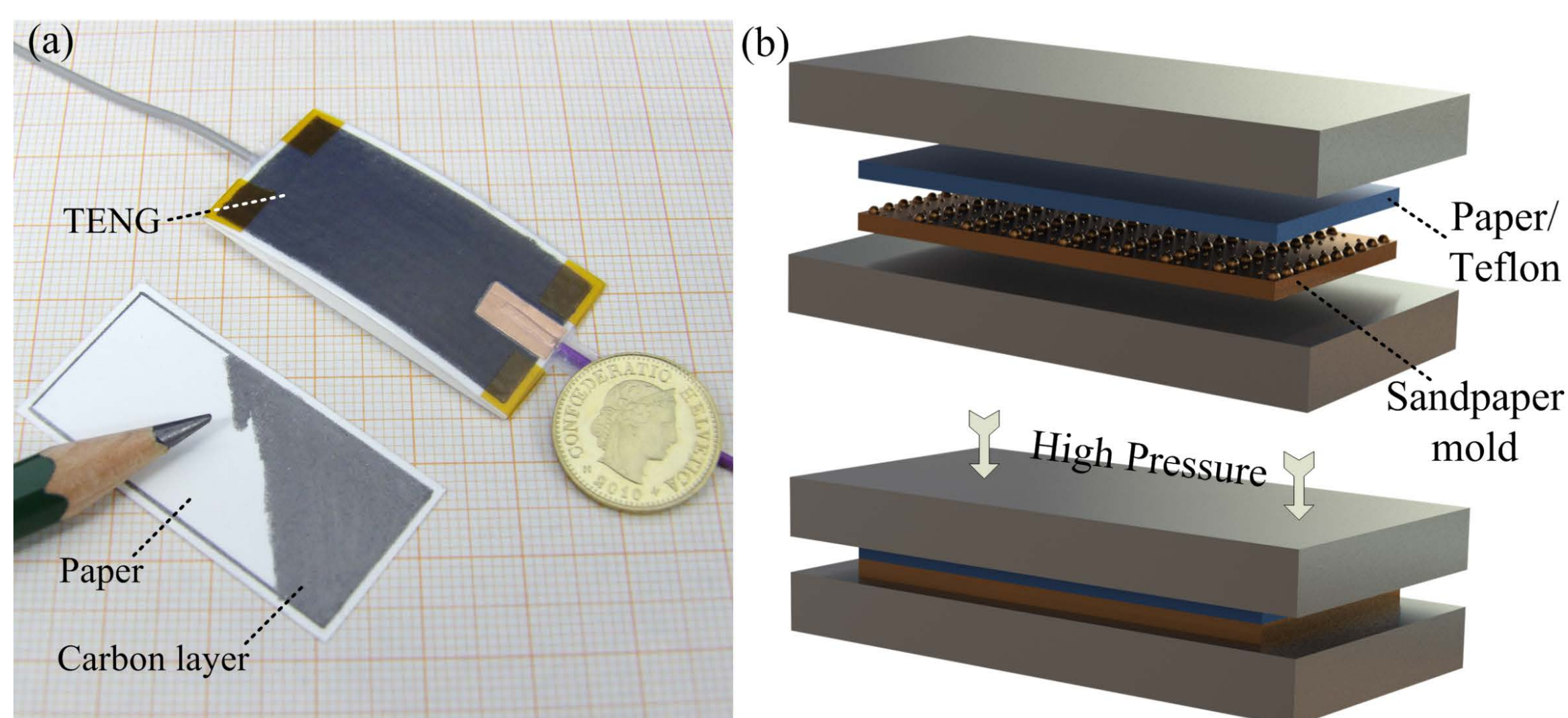
<http://www.kimlab.iis.u-tokyo.ac.jp/>

Advanced NEMS (Unconventional Nano fab.)

Our research goals are to build smart nanosystems and integrate nanoscale components in micro sensors, in particular for environment/bio-sensing, through both bottom-up and top-down approaches. Based on these studies on nano/micro components for the fabrication of novel nano devices, we investigate to develop various micro sensors for biological applications, such as i) MEMS device for electrical/physical characterization of single cell, ii) Tribo-electric nano generator, energy harvesting MEMS components for wearable sensors, etc.

On the other hands, We investigate a novel fabrication method to achieve the user-friendliest, low-cost, and safest way for dissolvable micro needles patch with vaccine delivery. The micro needle mediated drug delivery system has been developed to provide painless self-administration of biological drug with patient friendly manner. Especially, dissolving micro needles, which deliver the target drugs as the drug-loaded micro needle dissolves into the skin, have been spotlighted recently.

Penciling a Triboelectric Power source on a Paper



マイクロニードルパッチの利点

**Transdermal Therapeutic System
Microneedle Patch**

- No Pain & Fear
- Patient-friendly
- Non invasive, fast healing
- No administration
- Less space storage
- No biohazardous waste
- No infections (more safety)
- Less tissue damage

