Institute of Electron Technology

Division in Kraków
Ul. Zabłocie 39 ,30-701 Kraków

www.centrum-ltcc.ite.waw.pl
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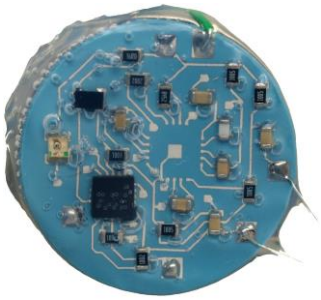
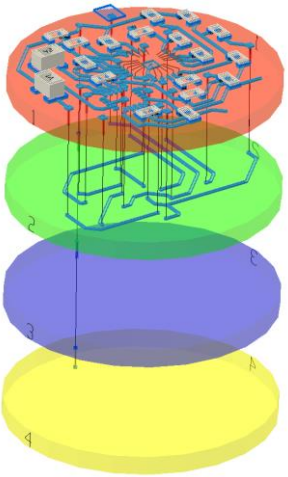
Development of LTCC materials and devices

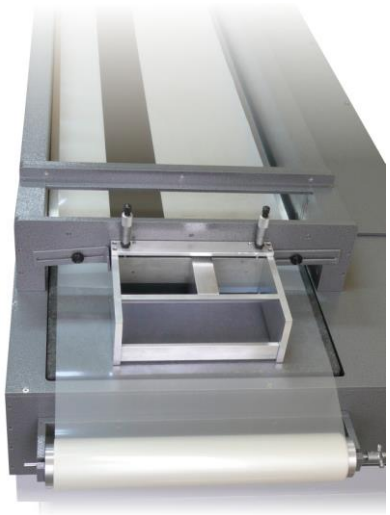
We have a state-of-art LTCC facility, allowing us to design and manufacture a wide array of LTCC devices:



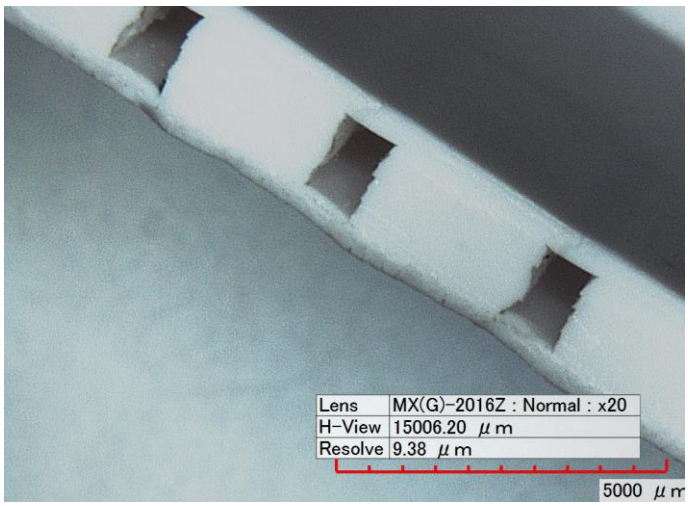


- **sensor systems**
- **microfluidic systems**
- **ceramic interconnection (PCB replacement)**
- **devices with SMT elements**
- **devices with custom-designed ASICs**

We develop and fabricate custom LTCC tapes. The range of materials includes:



- **dielectric materials**
- **high-k (k>1000) dielectric materials**
- **relaxor-dielectric microcomposites**
- **ferristic materials**



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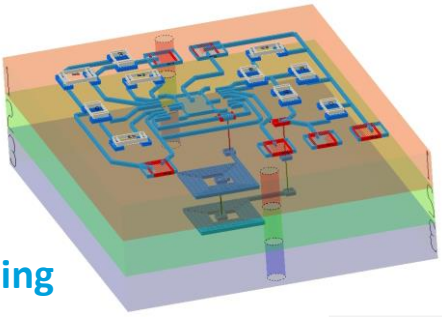
LTCC Training program
Design to fabrication in 4 days

This is a hands-on training program, developed for the needs of early-stage researchers within the SENSEIVER EU FP7 project. Over four days of the course, the attendees manufacture a test device, obtaining a hands-on experience with various stages of the LTCC process:



- ✓ **Tape casting**
- ✓ **Tape cutting**
- ✓ **Via drilling and filling**
- ✓ **Conductor screen printing**
- ✓ **Stacking**
- ✓ **Lamination**
- ✓ **Firing**
- ✓ **Firing process control**
- ✓ **Post-firing inspection**
- ✓ **SMT assembly and soldering**
- ✓ **Device Testing**

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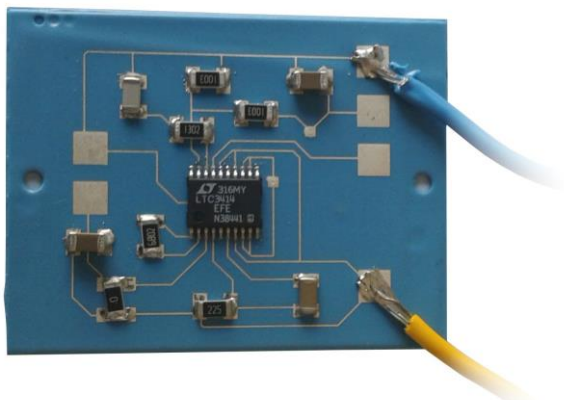

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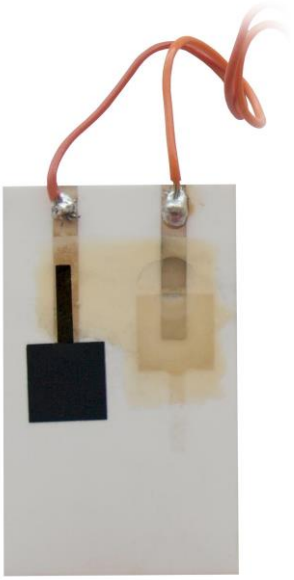
Planar pH sensors

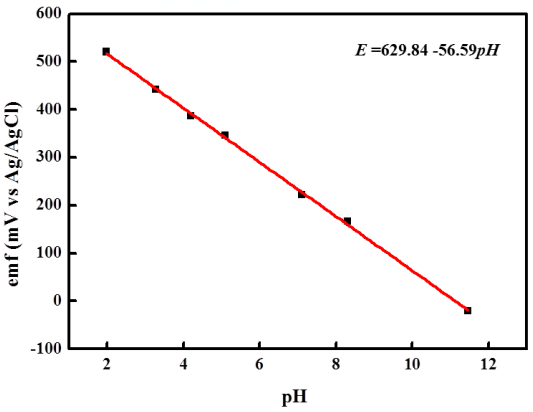
We develop and fabricate planar pH sensors in thick-film technology, based on metal oxide layers (RuO2, RuO2-TiO2, RuO2-Ta2O5). A reference electrode can be manufactured on the same substrate, or on a separate substrate.

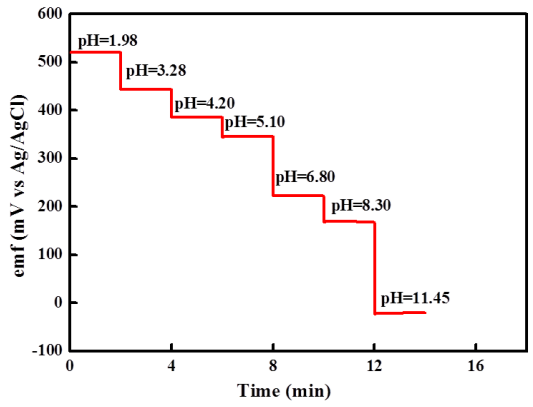


Advantages of our solution include:

- **elimination of bulky glass electrodes**
- **planar device can be soldered to PCB**
- **low unit cost**
- **high customizability**
- **fast response time**

We have also developed co-firable thick film pastes, which can be used to manufacture sensor microsystems in LTCC (Low-Temperature Co-fired Ceramics) technology.





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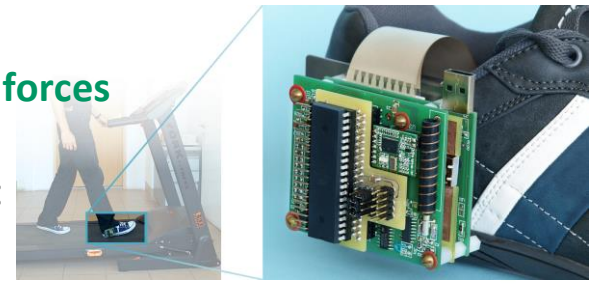
Systems with piezopolymeric force transducers

We research and develop systems involving force transducers based on piezoelectric polymers (i.e. PVDF). Piezoelectric polymers offer a number of advantages over piezoceramics (i.e. PZT), such as:

- **low cost**
- **mechanical flexibility - bending**
- **possibility to measure bending forces**

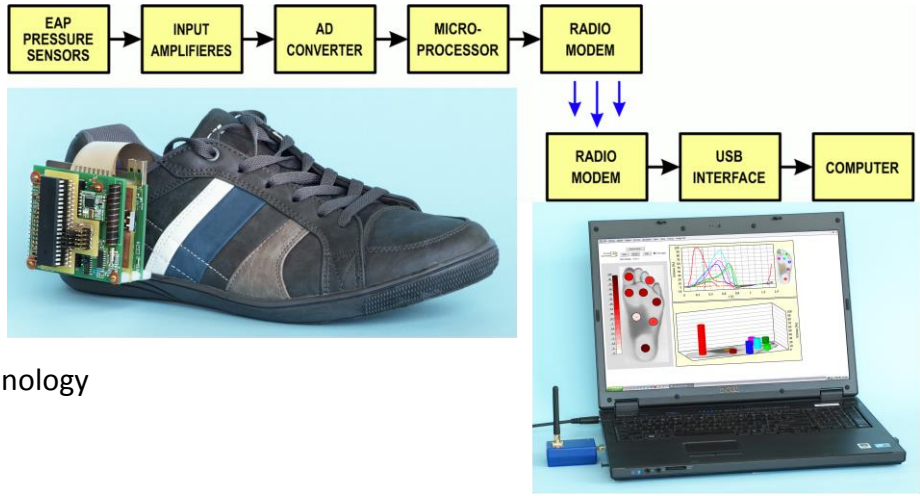


Our competence in the area includes:

- **transducer development**
- **frontend amplifier development**
- **data acquisition system development**
- **development of analytic software**

The applications include:

- **posture monitoring**
- **blood pressure measurements**
- **entry detection**



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