

Novel Impedance Cell for Highly Reactive Powder Samples



Karol J. Fijalkowski and Rafal Jurczakowski

University of Warsaw

10th International Symposium on Electrochemical Impedance Analysis 2014

4th June 2014, Borovetz, Bulgaria

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overview

construction

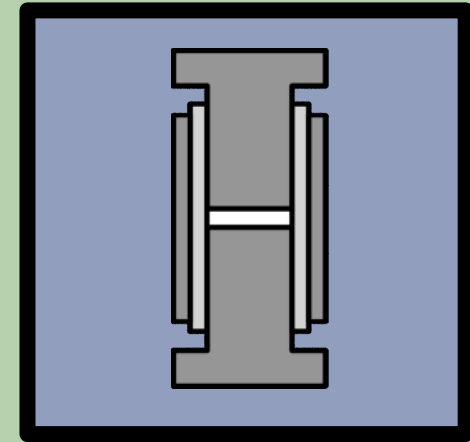
- simple construction
- possible to be load in a glovebox
- airtight

features

- multiparameter control
- easy to use

IP protection

- expected protection in EU, USA, JP
- technology ready to use





overview

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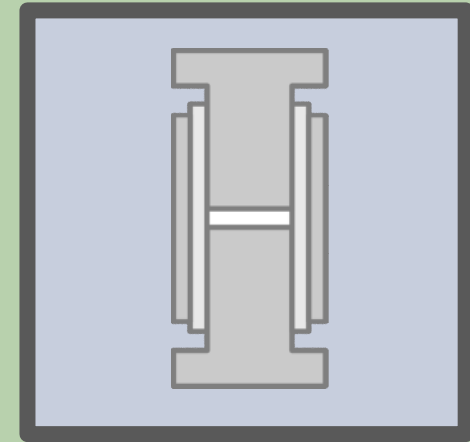
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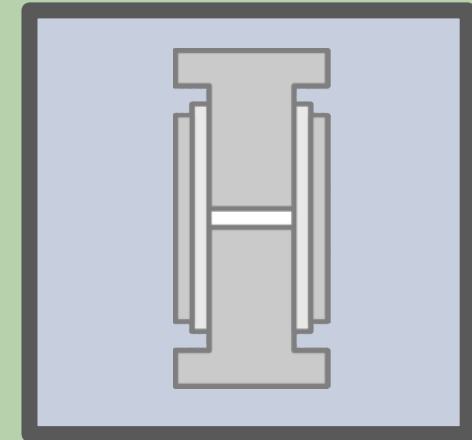
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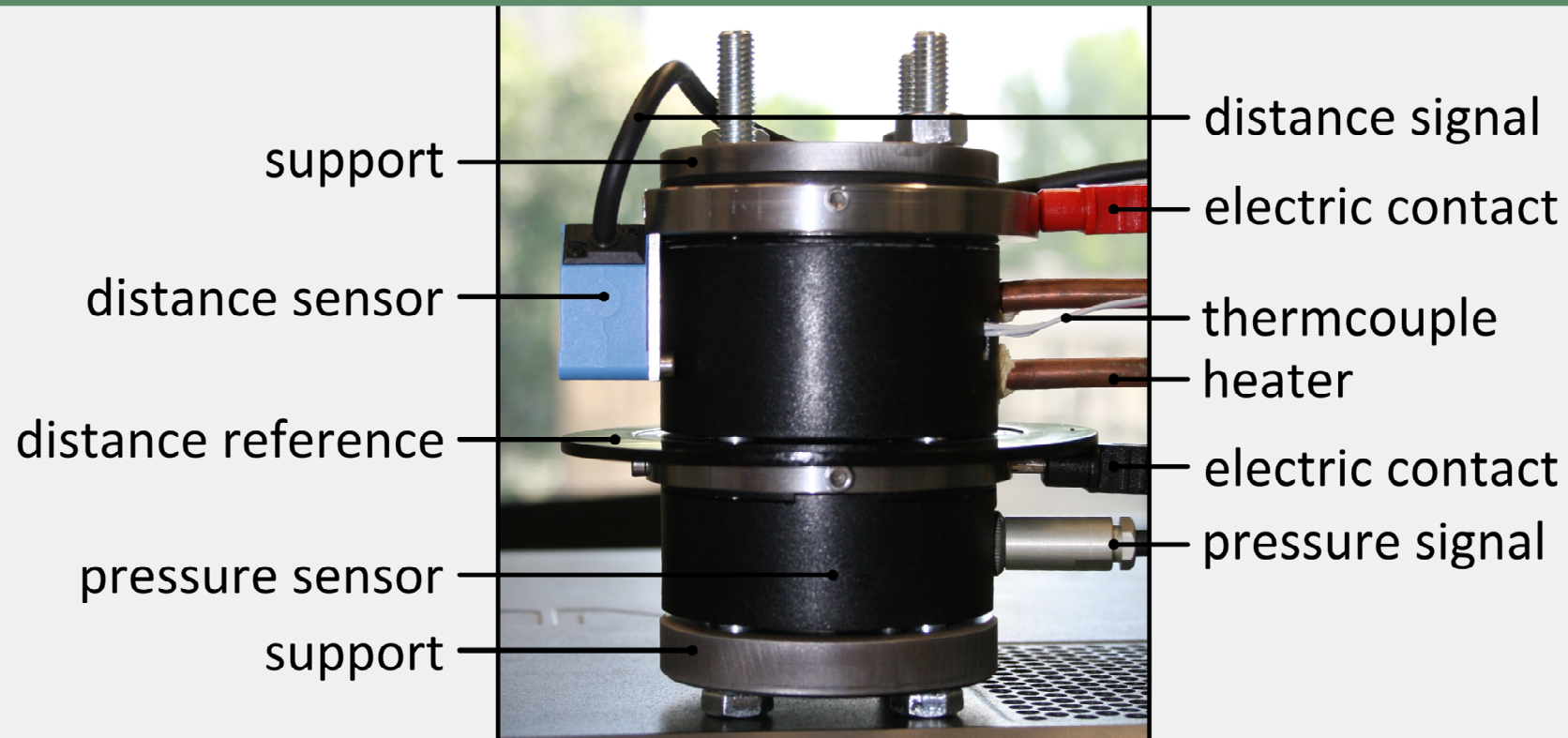
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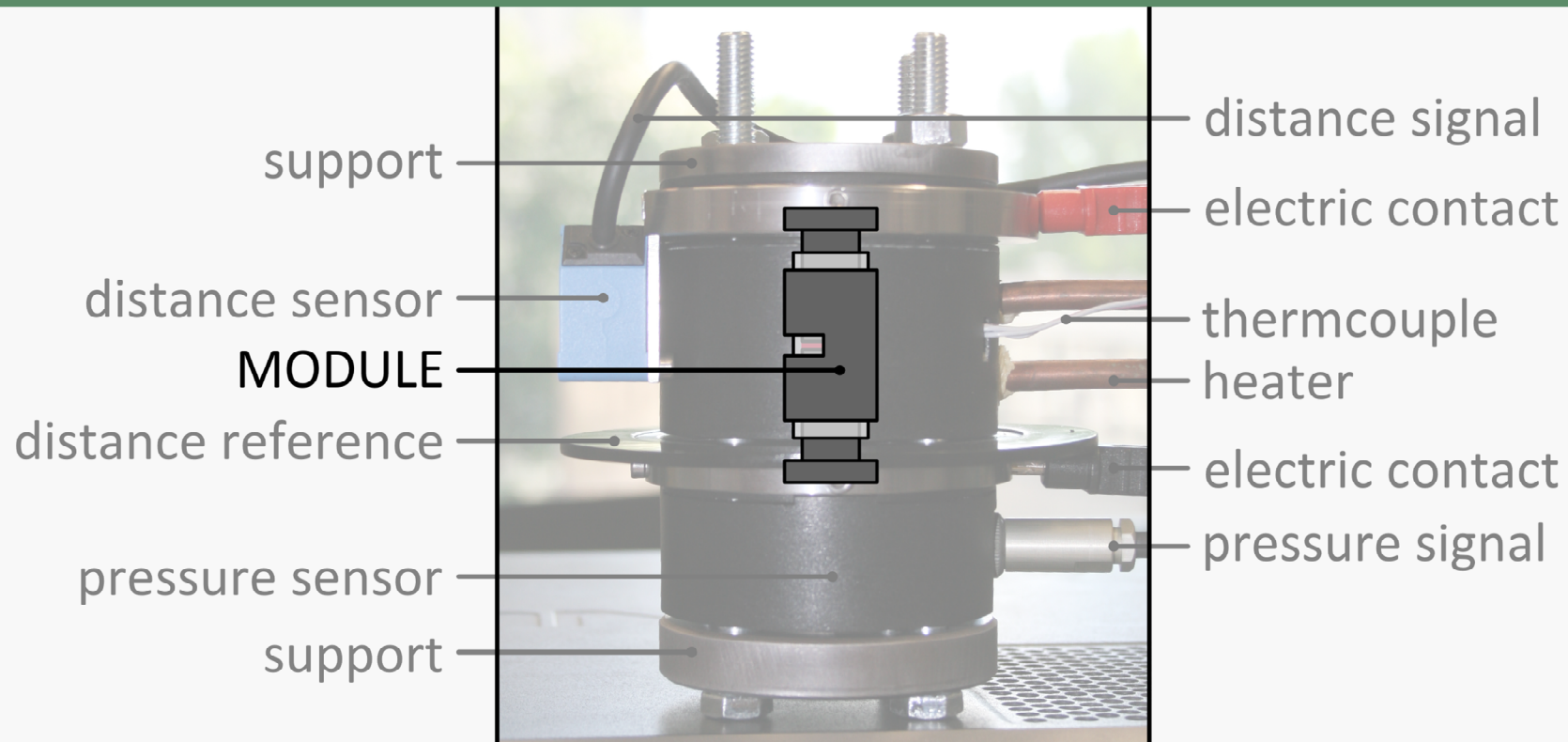


construction





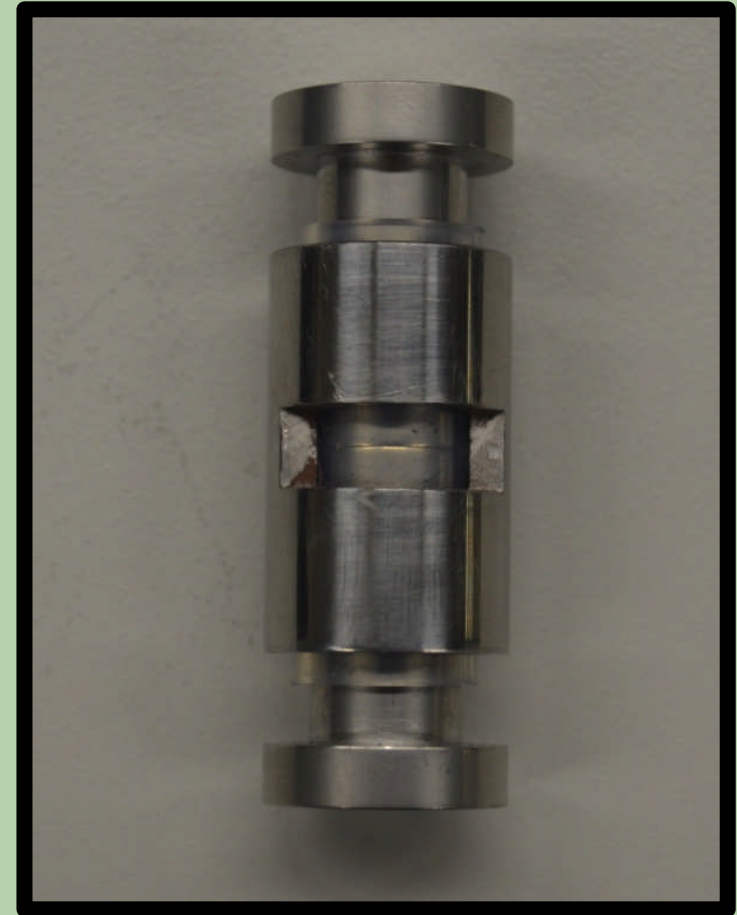
construction





the module

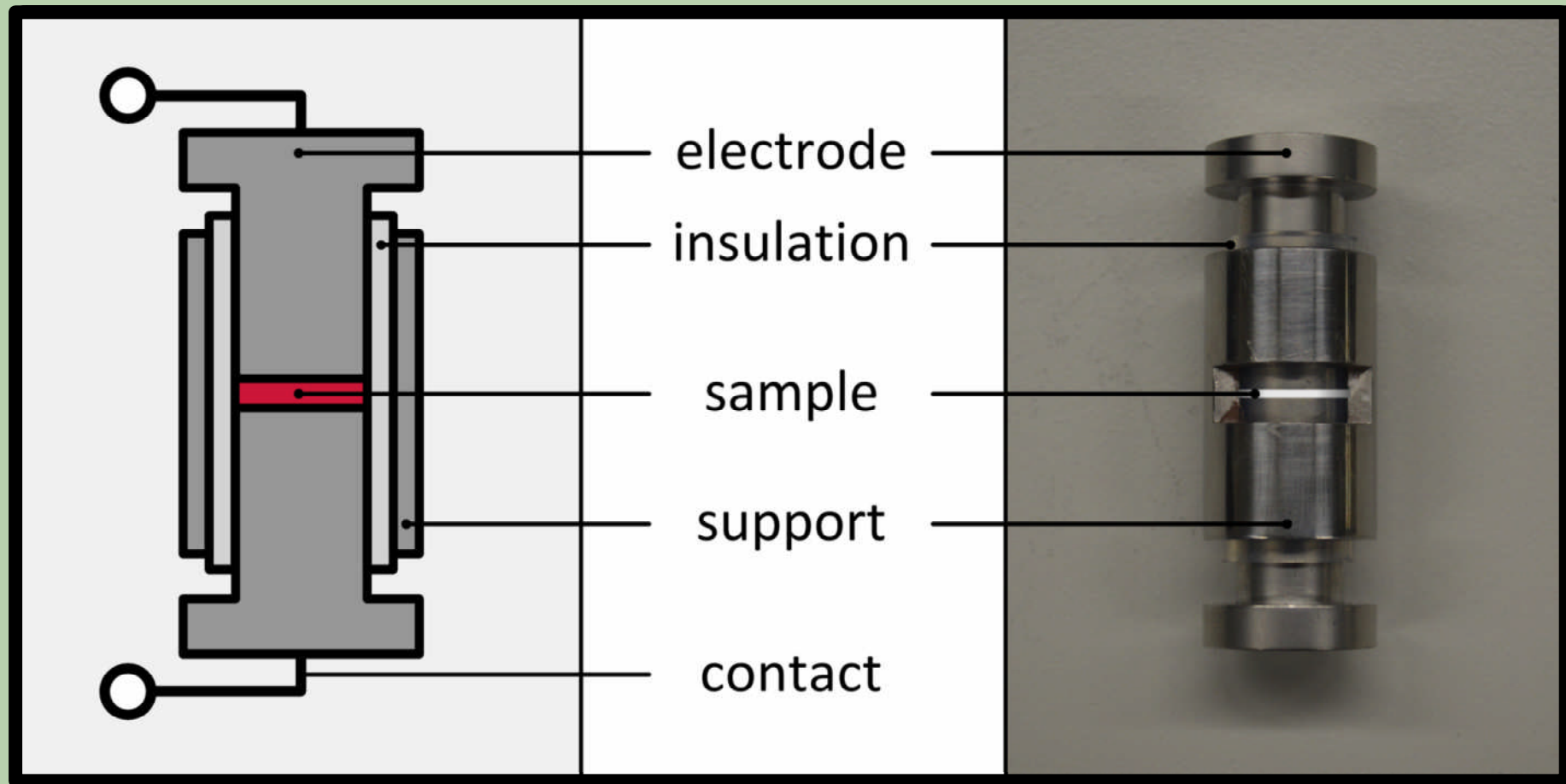
- pallet between the parallel electrode surfaces
- detachable, miniaturized, airtight, chemically inert





the module

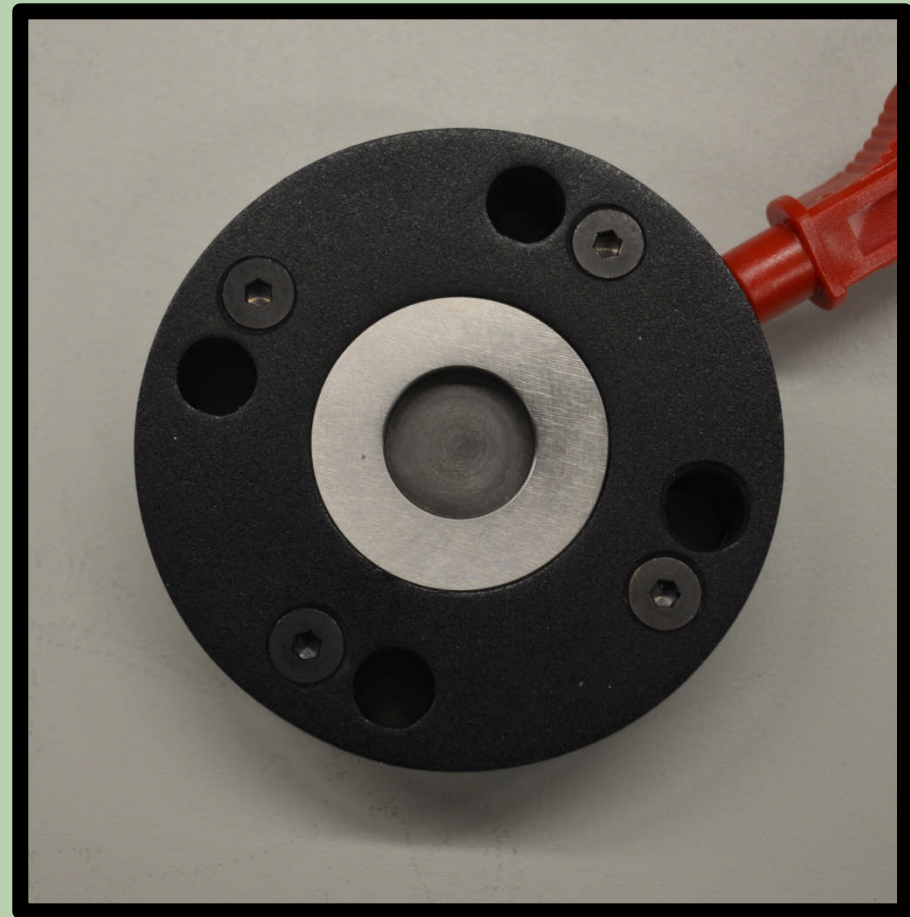
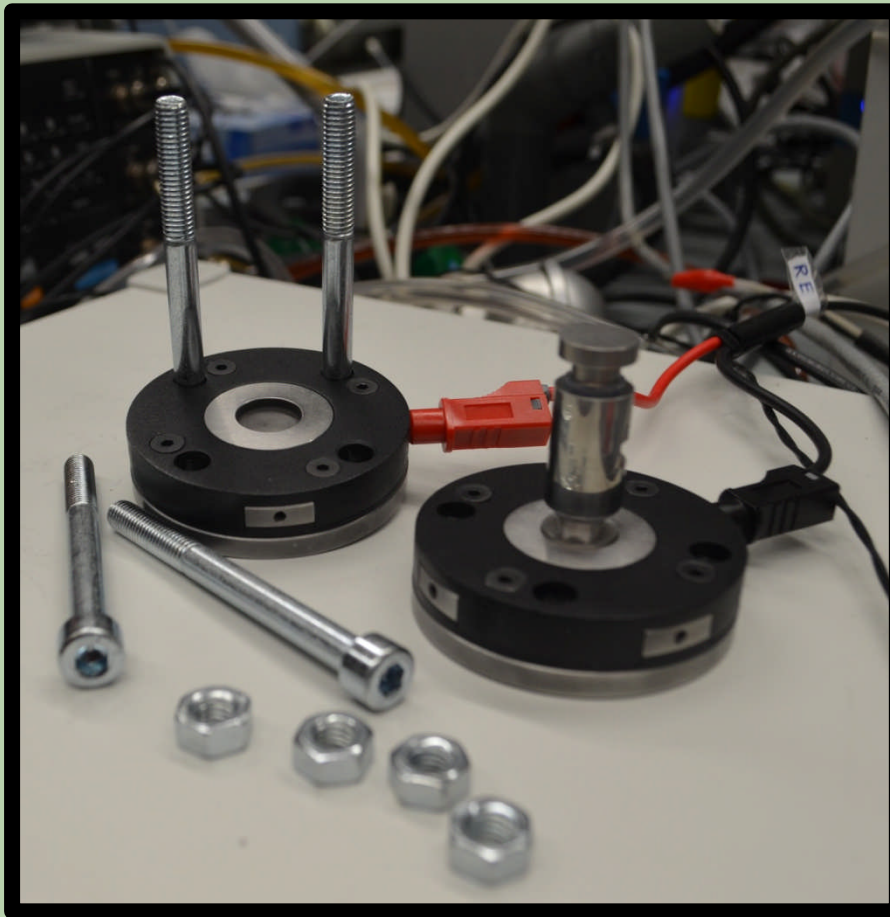
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construction

- all elements prepared using magnetic grinder
- arrangement ensures parallel electrode surfaces





features

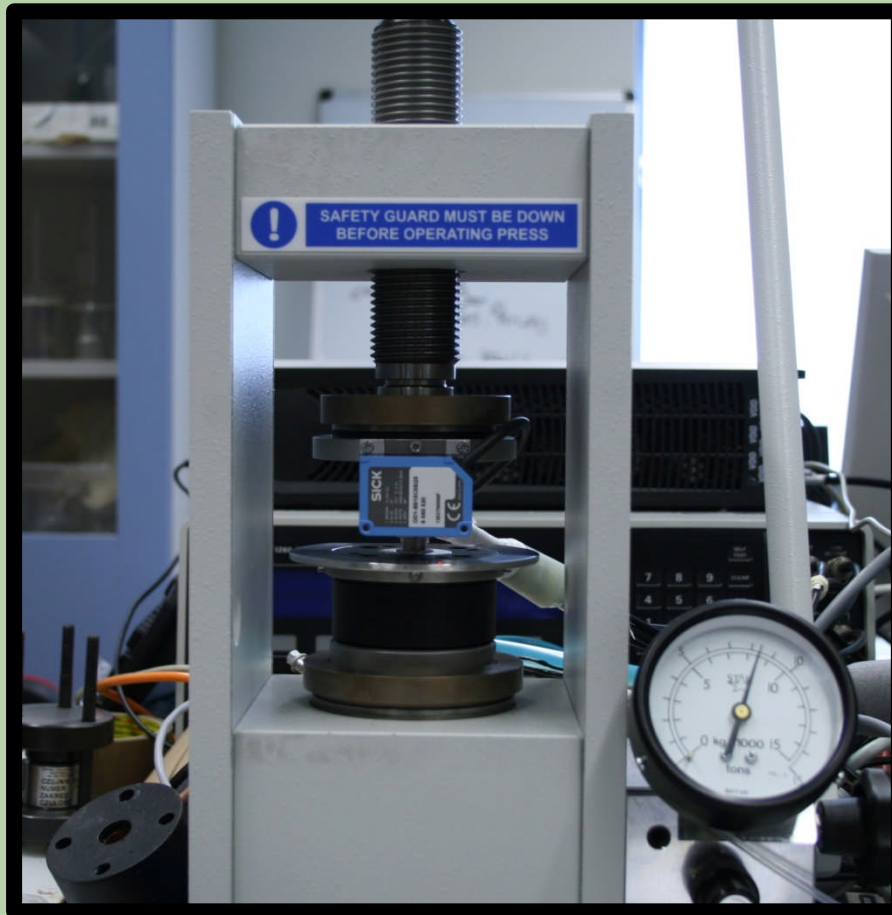


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pressure

- ZEPWN pressure sensor
- range up to 100kN, resolution 0.1kN

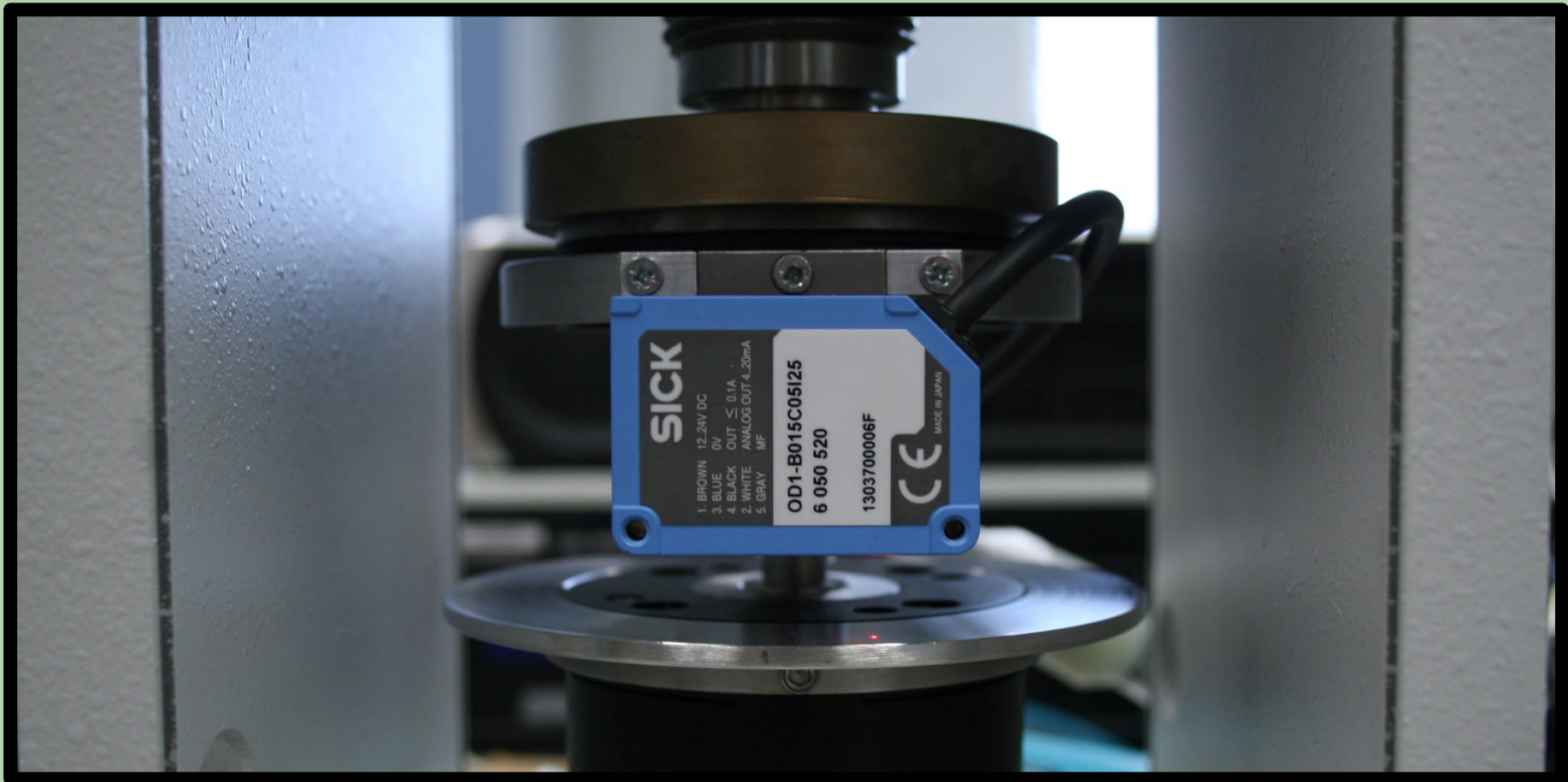


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thickness

- SICK laser distance sensor: set of 3 sensors / single sensor
- range 0.01–1mm, resolution 1 μ m

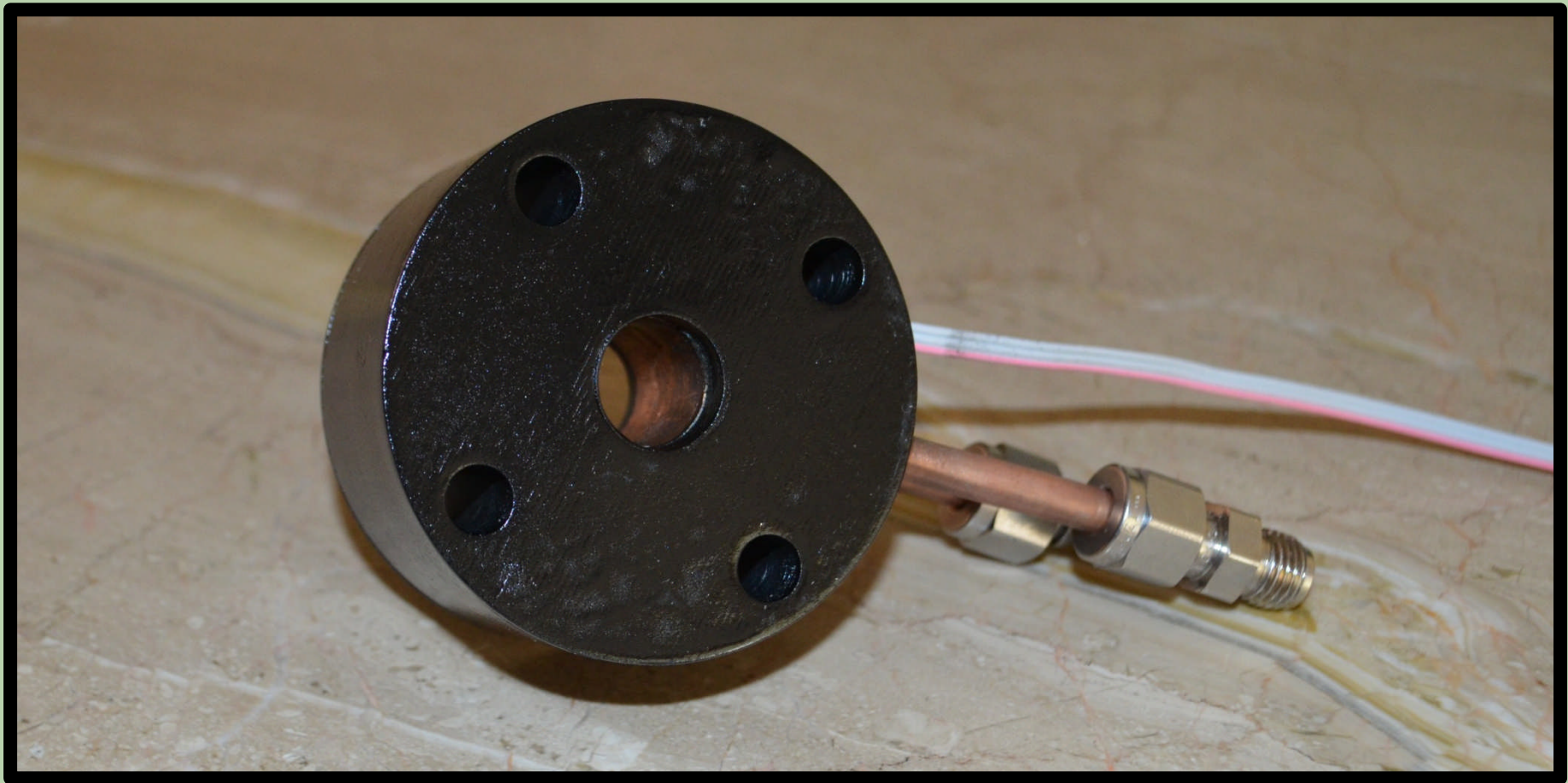


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temperature

- DALLAS temperature sensor
- range up to 180°C, resolution 0.05°C



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IP protection



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IP protection

patent application:

- 2010 – the invention
- 2011 – Polish patent application (P.396725)
- 2012 – PCT patent application (PCT/IB2012/002111)
- 2014 – entrance to national/regional phase: EU, USA, JP
- 2015 – expected grant of patents

possible cooperation and licensing

- technology is ready to use
- University of Warsaw is willing to license the technology



summary

advantages of the technology:

- possibility of investigation reactive powders
- simple, miniaturized construction
- simultaneous control of pressure and temperature
- precise control of (parallel) geometry of the electrodes
- electronic sensors with on-line view
- high pressure: 2GPa using press, 0.5GPa using screws



acknowledgement

Ministry of Science and Higher Education

120000-501/59 PM-117

EU 1.3.2. program

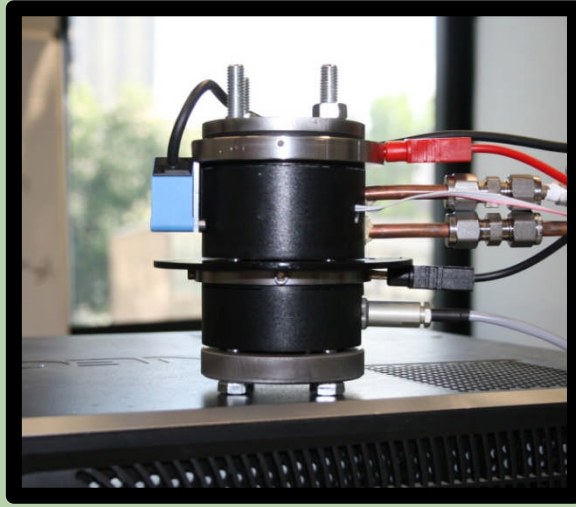
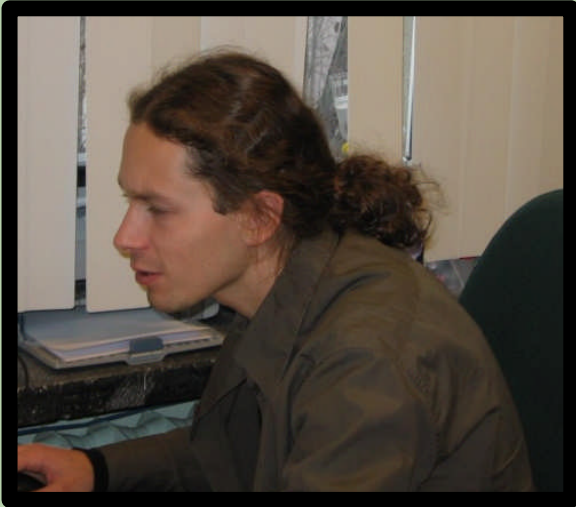
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The End



Thank you for your attention

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