Experiment with analogue reactor Parkhomov
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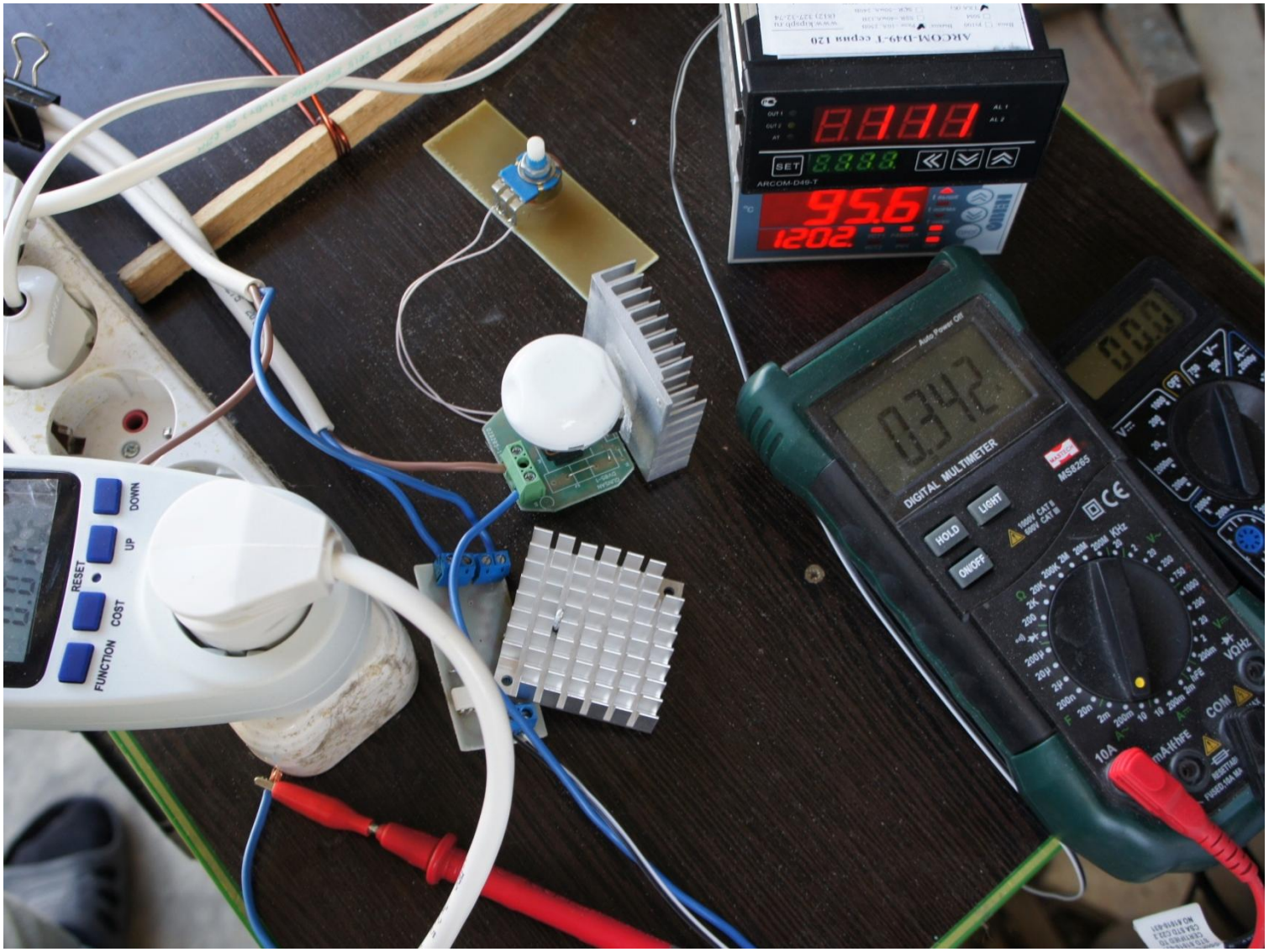
Experiment consisted in simultaneous heating equal power two reactor tubes, one of which contained mixture was powder nickel with aluminumhydride lithium, while the other was base curb. For manufacturing of reactor cells were used ceramic tubes, bushings, heat-resisting cement and heater similar to how this is done in reactors AG Parkhomov. Meals Heater for happened by means dimmer with triac BTA24-600. Submission of power supply occurs through the solid-state relay on the basis of the triac and optotriac with the detector zero, the signal at which was fed from thermoregulator model ARCOM-D49-T-120.
Start the experiment - 17:30 05/24/2015, ending - 05/26/2015 7:45 Basic information about the experiment, and graphics can be found at:
https://docs.google.com/spreadsheets/d/15ODbN9Oq6Pjyp9A61hdX0-fBJIXBBKMk7Ei06PzTc-Q/edit#gid=1389964837
Photos posted https://mega.co.nz/#F!mBAwTCLI!A7g5i8LjxdPZdsoZjXCBWQ



Measuring and controlling instruments.

Left - power meter, multimeter big - ammeter, small - a voltmeter, in the middle of the dimmer itself and a number of solid-state relay. The thermostat temperature readings for the top of the reactor with fuel, the lower - to the testimony of the reactor without fuel.

data:

Ceramic tube

Size (DxdhL): 10x5x140 mm

Circular cross-section rod

Size (DhL): 5,0x40 mm

Material: alumina ceramic grade S799

Max. operating temperature of the material: 1600 ° C

The fuel composition

500 mg of nickel (used nickel from Parkhomov)

50mg $LiAlH_4$

Heaters

Cantal - 2m = 57 turns, 10.58 ohm, diameter 0.6mm, both reactors characteristics completely identical.

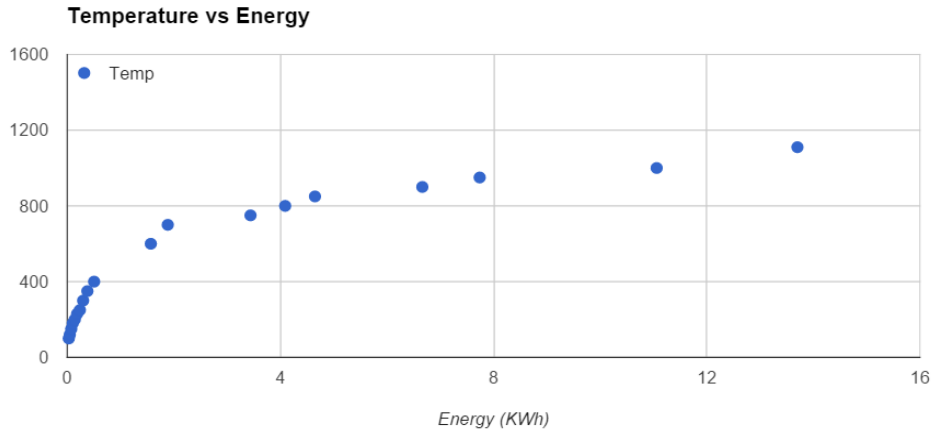
To seal used refractory cement prescription Parkhomov.

Al_2O_3 powder ~ 2 µm particle size - 1.5 g (2mkm powder particle size)

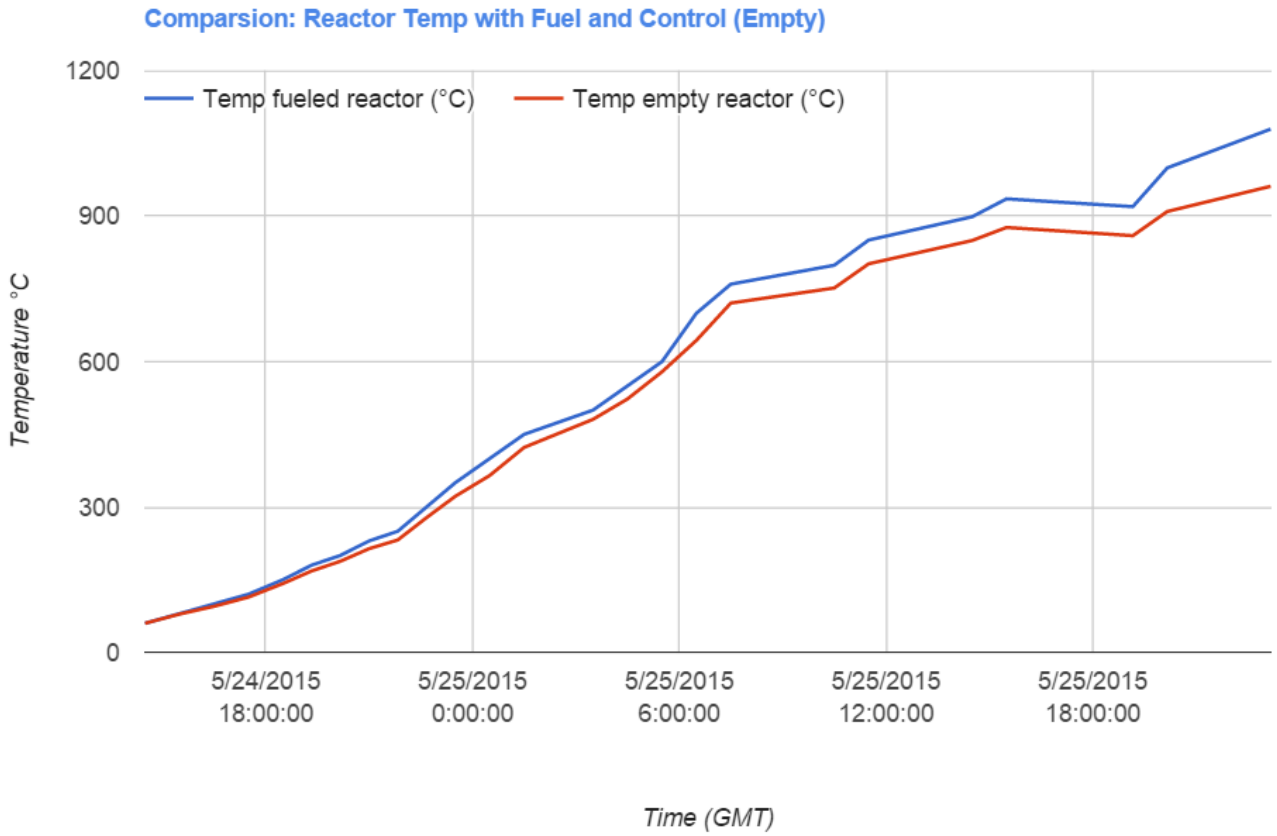
ZnO powder particle size unknown - 0.5 g (powder during mixing heavily pounded)

Na_2SiO_3 solution 37.5% - 2.9 ml (used conventional stationery. Adhesive).

Working cell assembled as in the photo, the two sleeves are recessed into the inner to 5mm, 50mm cavity tubes filled with fuel.
Complete sealing of the spiral should slightly increase the service life of Cantal.
Temperature measurements were made by a thermocouple attached to the surface of the reactor, which was a bad decision, because at the end of the experiment, the cement has fallen off with a thermocouple that has made an damage and led to the rapid burning heater for the reactor fuel.

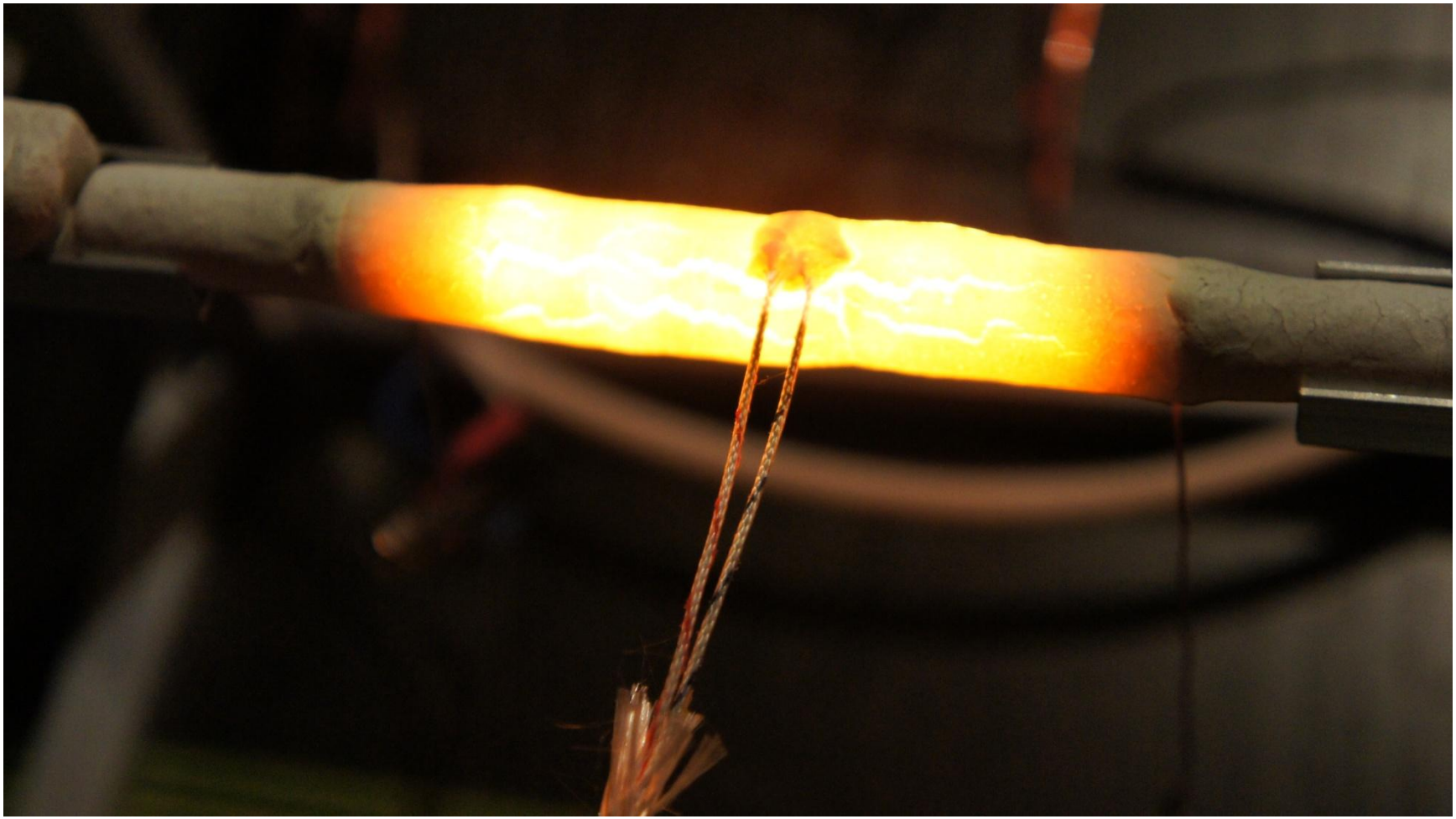


The upper chart shows the cost of electricity for heating the two reactors to a certain temperature.

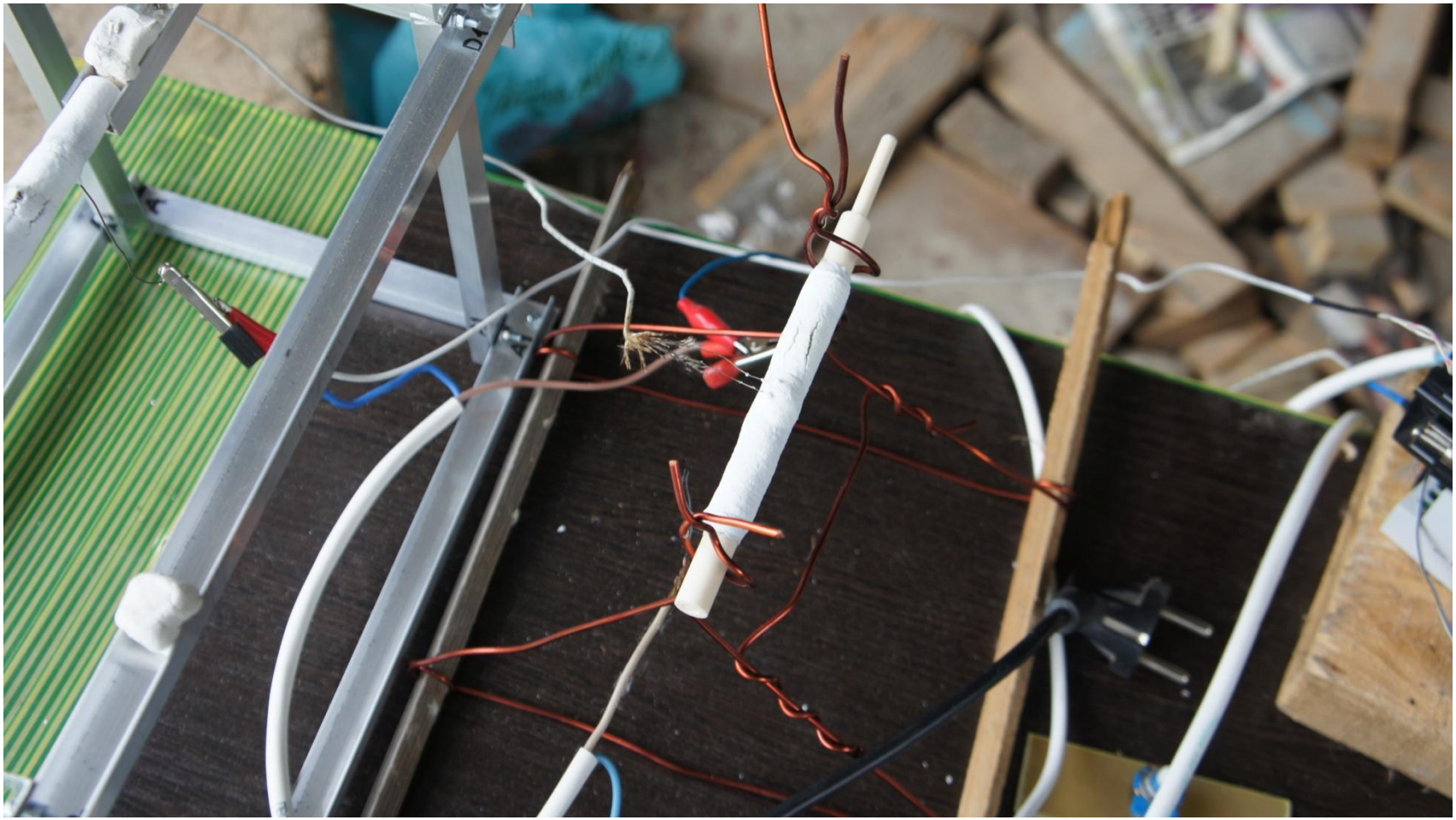


The lower graphic shows change temperatures surfaces reactors during experiment

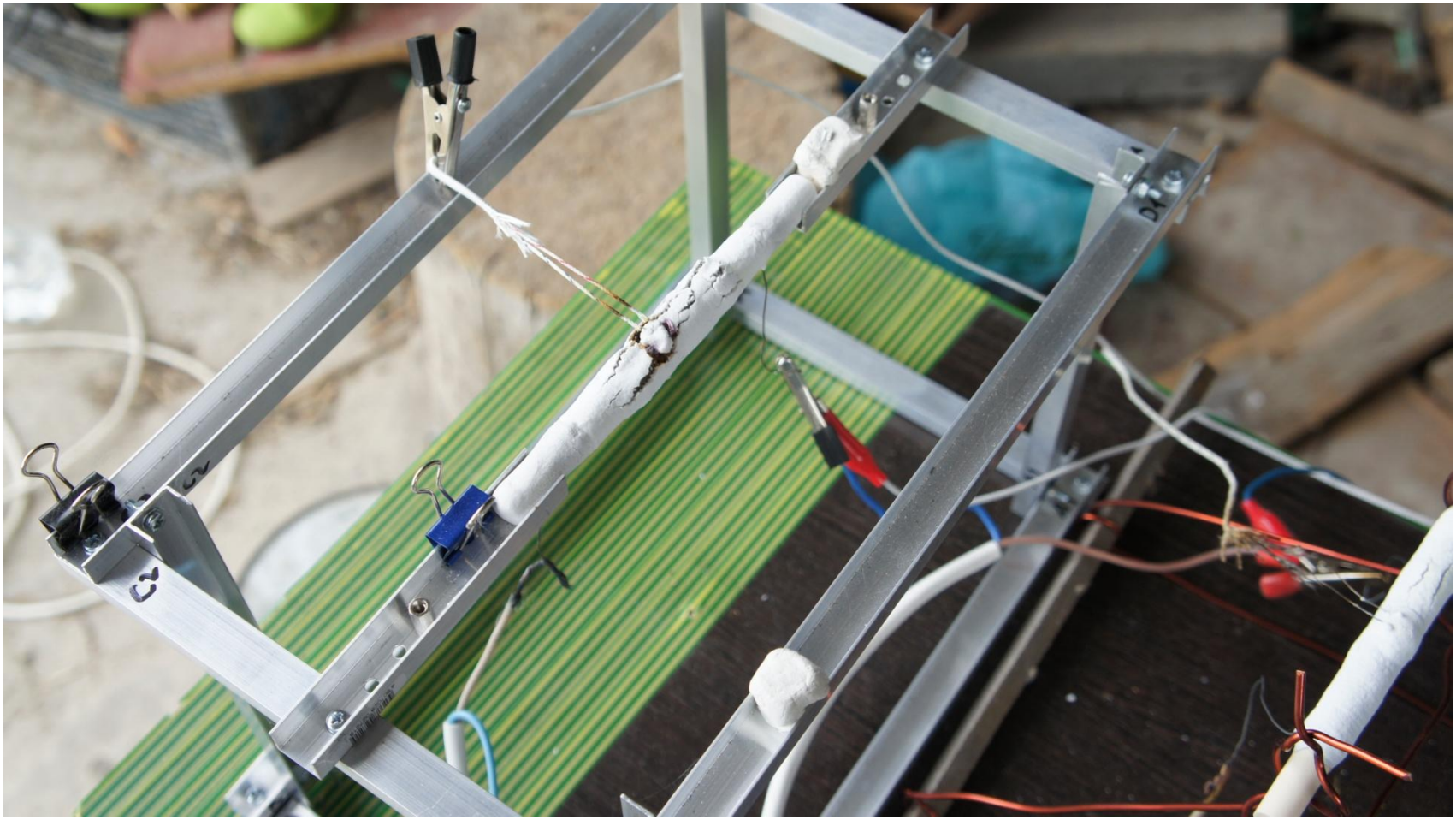
Reactor fuel shortly before the end of the experiment.
You can see the beginning of the destruction of cement.



Empty the reactor after the termination of the experiment. The surface of the cement coating heater and thermocouple virtually intact. Small cracks do not expose the spiral heater. After removal of part of the cement has been found that wire the heater has not changed.



Reactor fuel after the experiment. Cement almost completely destroyed in place where there was fuel. Spiral heater burned, thermocouple, too burned, although contact thermocouple protected by a spiral layer of cement thickness of 1 mm.



Operation of the reactor at the maximum heating continued for about 6 hours, and
It stopped as a result of burnout of the electric heater of the reactor fuel. Severe
destruction of cement in the central part of the tube with fuel and burnout cantal
helix indicate highly significant excess of heat in comparison with
empty reactor, where the spiral remained intact and visible only on small cracks
cement surface, although the material, the dimensions of the tube and the electrical heating
capacity of both reactors were identical. The pattern of destruction of the reactor fuel indicates
that the temperature reaches at least 1300 ° C at an empty reactor about 1000 ° C.