loading Nickel with hydrogen at ambient temperature

Greccio, 13th Int'l Workshop on Anomalies in Hydrogen Loaded Metals

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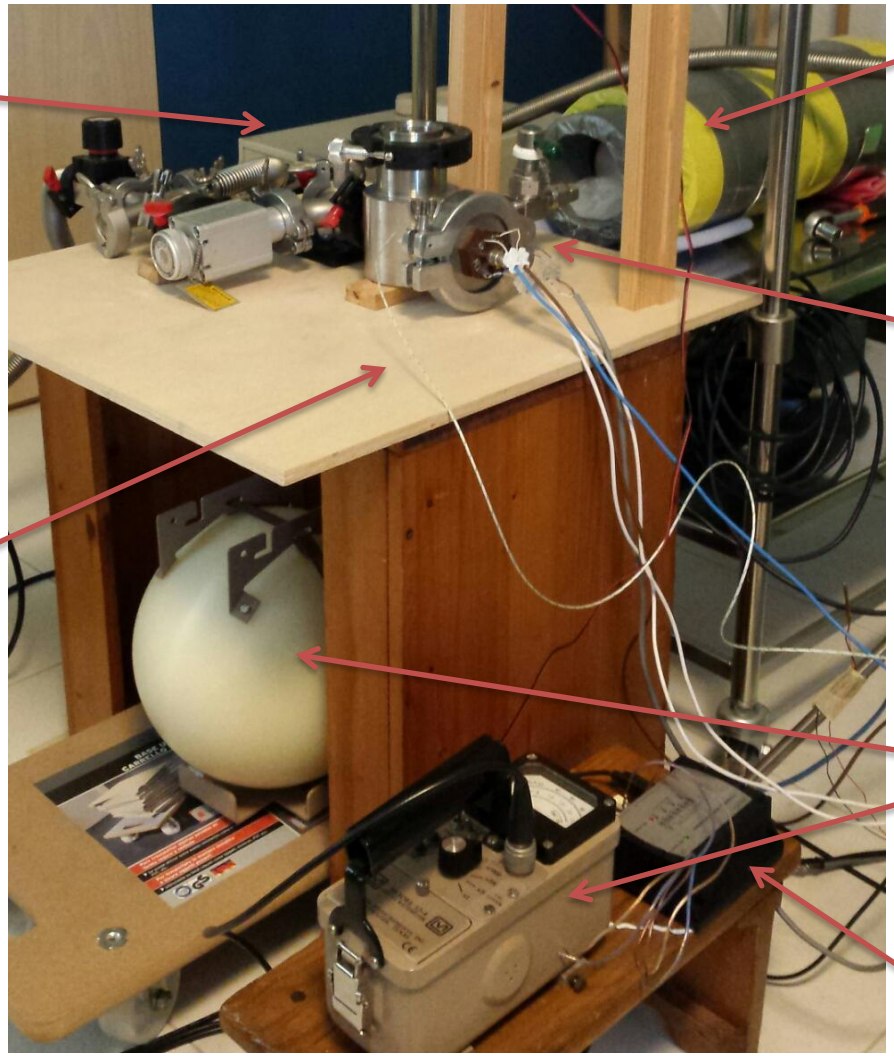
5-9 October 2018

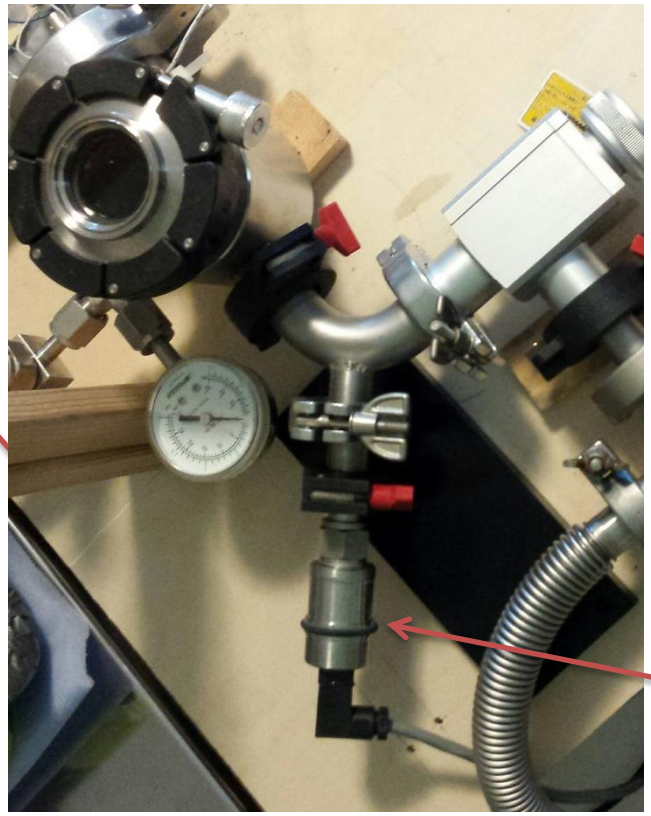
Outline

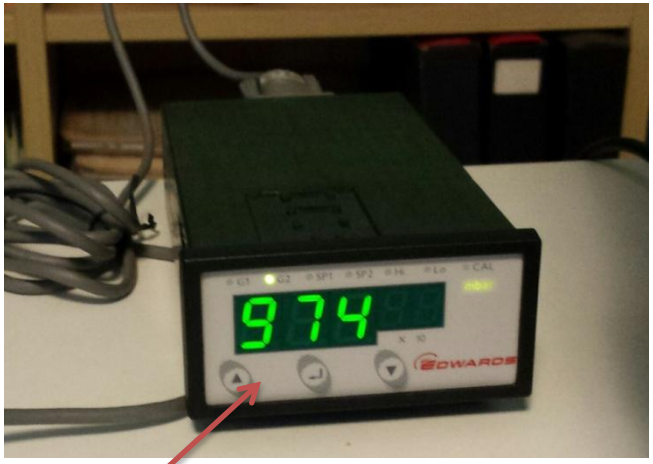
- Setup overview
- The Nickel sample
- Loading monitoring
- <H>/<Ni> ratio
- Final conclusions

Setup overview



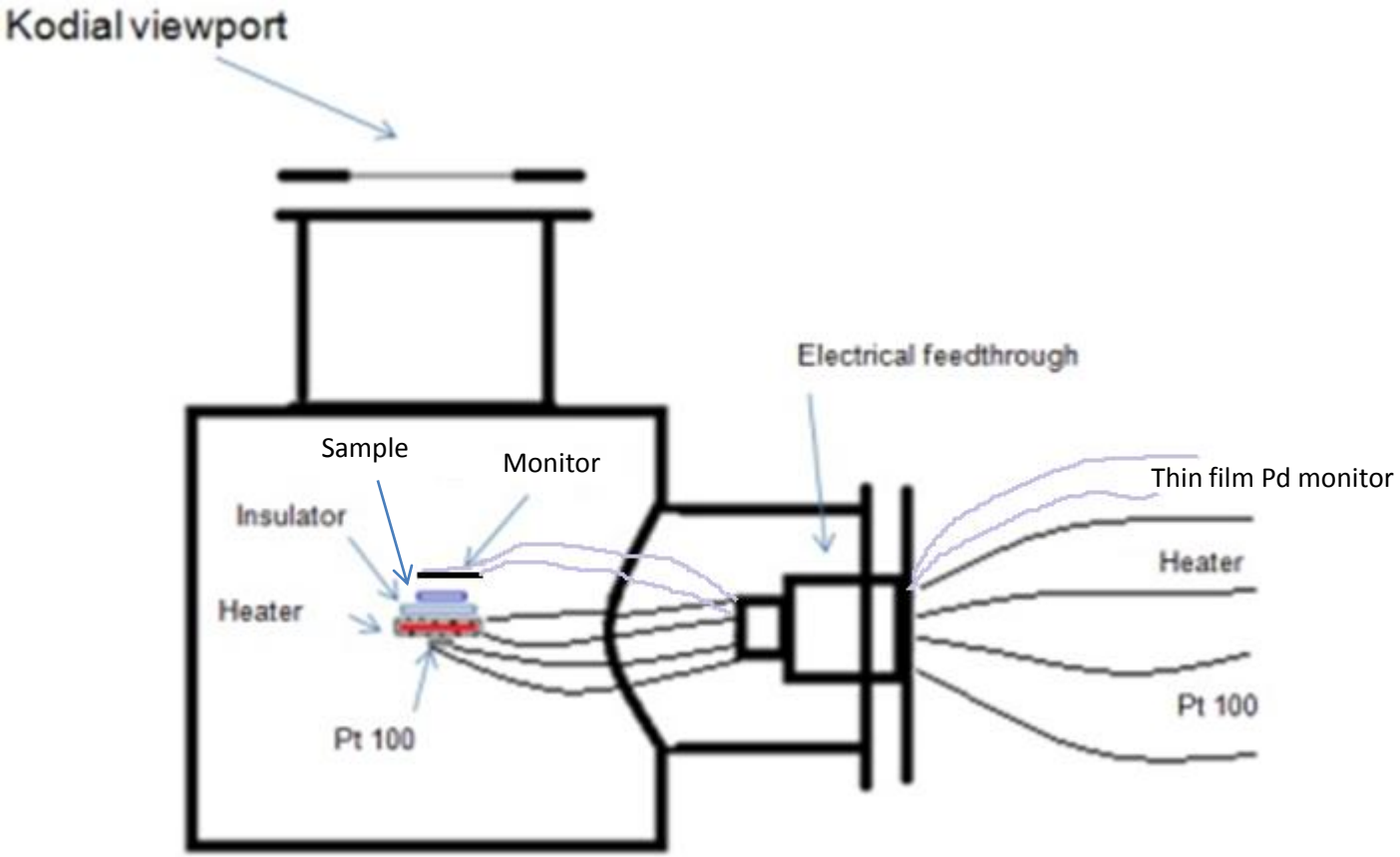
Pressure Monitoring



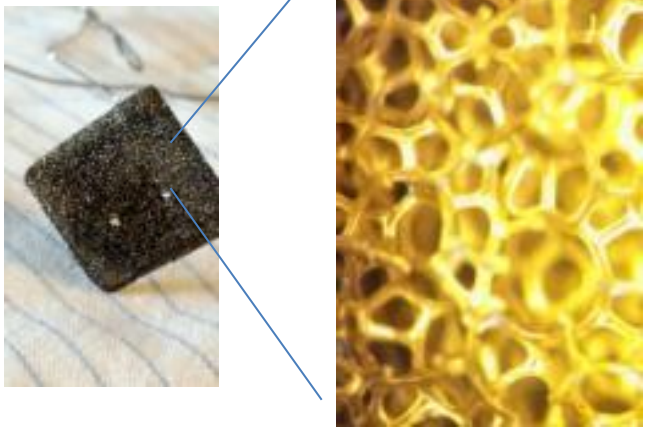


Pressure sensor and display/interface

Reactor 1 setup sketch



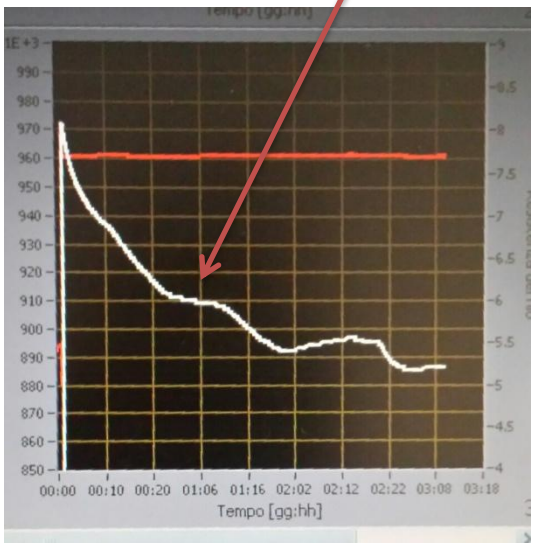
Pd electroplated Nickel sample

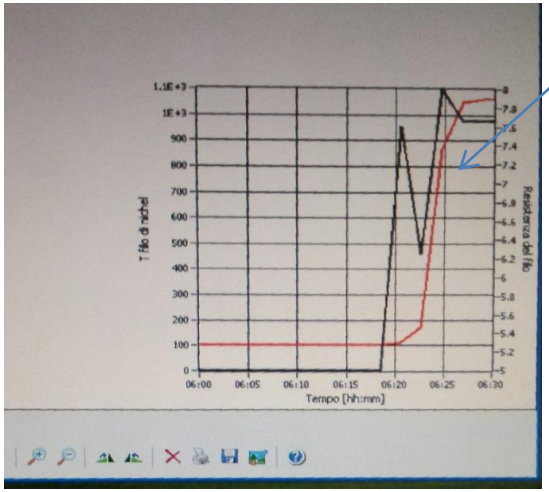


50 X

Pd electroplated Nickel sample

Pressure inside the reactor trend.
The decrease is -80 mbar





Pd thin film monitor absorption

Positioning of the sample in the reactor

0.5 gr
Ni sample

weakly radioactive tourmaline

<H>/<Ni> ratio

The reactor 1 at a pressure of 975 mbar contains about 300 cc of gas and therefore 80 mbar is about 8.2%, i.e. 25 cc of hydrogen which have been "absorbed", presumably from the palladium deposited on the spongiform nickel, since the absorption of the palladium of the Monitor resistance has run out immediately and is normally negligible in terms of pressure. 25 cc of hydrogen at approximately atmospheric pressure are 25/22400 moles of H_2 and therefore for the number of atoms in a mole are: 6.7×10^{20} molecules of H_2, ie 13.4×10^{20} hydrogen atoms.

Let's see now how much Palladium has been deposited on Nickel with a deposition of 2 minutes at 20 mA, more or less. 2 minutes are 120 seconds and 20 mA for twenty seconds make 2.4 Coulombs of charge that divided by the unit charge of the ion (1.6×10^{-19}) make 1.5×10^{19} Pd atoms (2.65 mg).

From these calculations, if I did not make mistakes, it would result in a ratio of hydrogen to palladium <H> /< Pd> equal to 89, outside any realistic expectation. The hypothesis that we can then make is that the nickel underlying Palladium is also active in absorption, but with a mechanism much slower than Palladium.

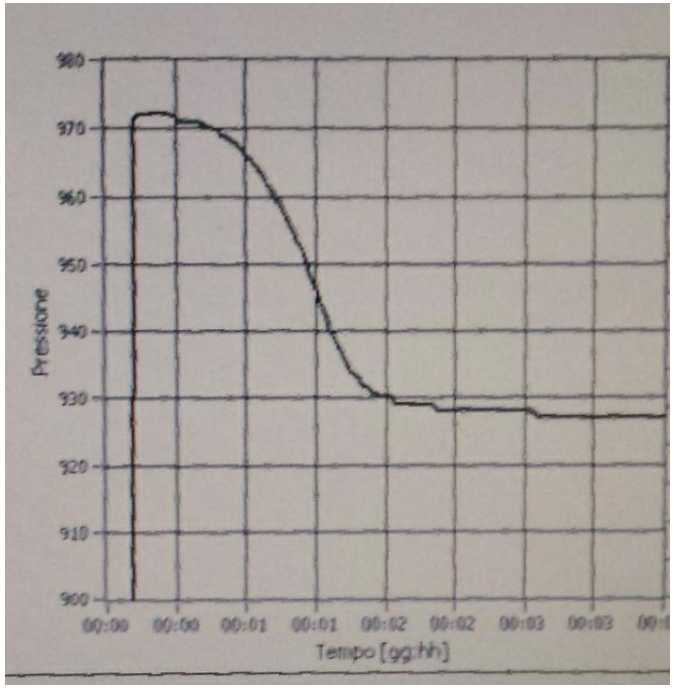
<H>/<Ni> ratio

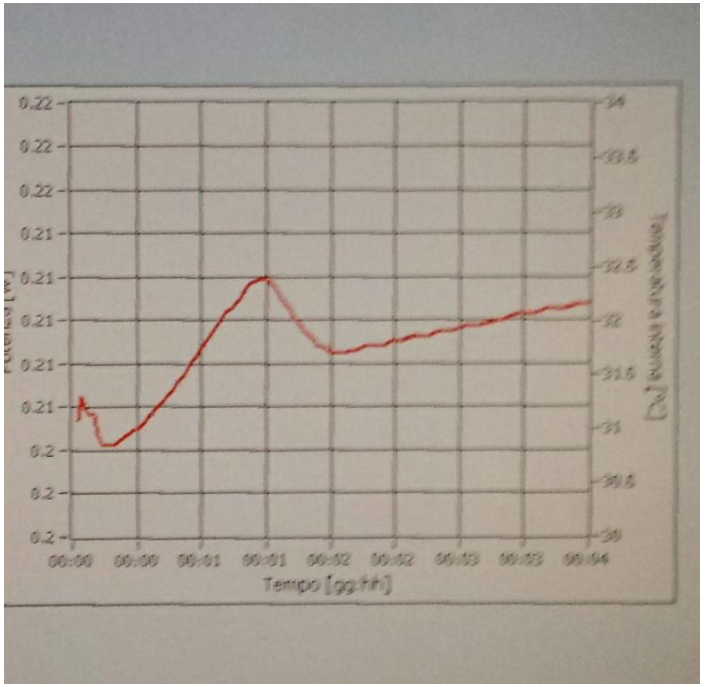
The weight of the Nickel sample is 0.5 grams which corresponds to 0.5 / 58.69 = 8.5×10^{-3} moles and therefore 51×10^{20} atoms. So, after the first loading we have a ratio between hydrogen and nickel of 0.63 (13.4/51)

Second loading

The second loading step took about 2 hours

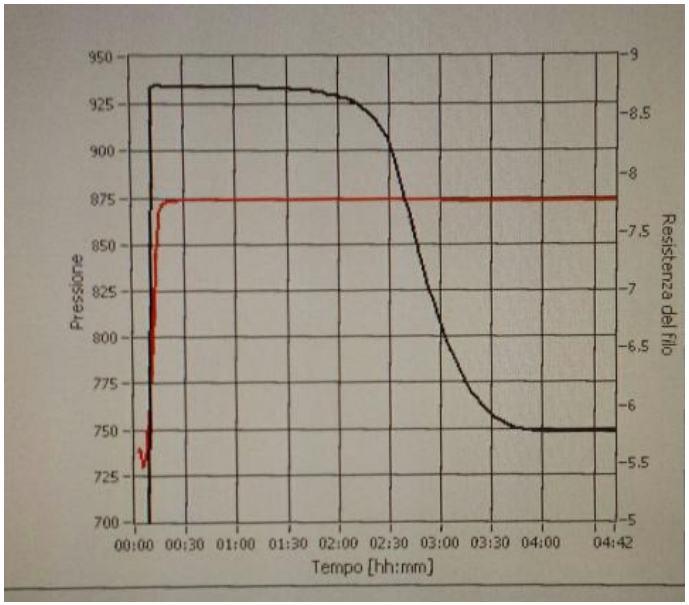
Sample temperature showing
Chemical absorption heat



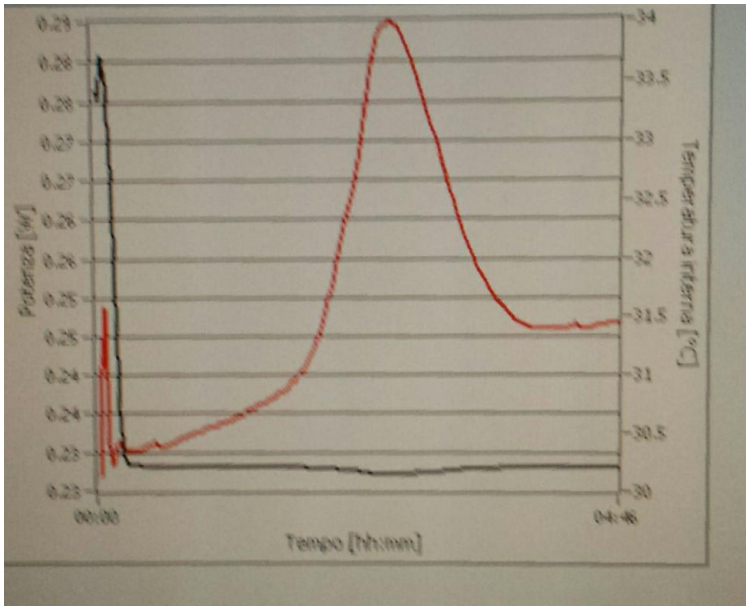


Third loading cycle

Pressure change about 180 mbar
red line = Pd monitor resistance

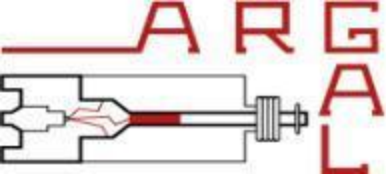


T sample increase about 3 degrees



Conclusions

- The unexpected ability to absorb hydrogen at room temperature by a sample of nickel on the surface of which a thin layer of palladium was deposited, could be exploited to activate LENR anomalies. In the specific, the pressure decrease at the end was about 360 mbar over 980 (114 cc in volume of H_2), such as to bring the ratio between hydrogen and nickel atoms to a value around 1.2, higher than the threshold considered for the activation of the LENR anomalies in the Palladium. The activity of in-depth analysis and replication of what emerged from the experiments described above is currently under way in the ARGAL laboratory in Bareggio.



Thank you for the attention