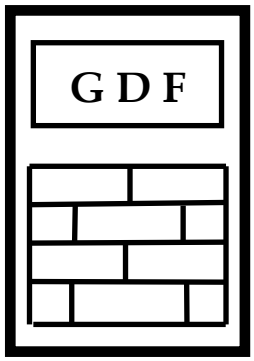
GDF DATA BANKS BULLETIN



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Content

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Structural aspects of temperature phase transition in PTC-thermistors. II. Combined DTA and electric measurements

Positive Temperature Coefficient (PTC) thermistors show a transition at specific temperatures over which their resistance suddenly decreases. Structural significance of this transition is explained by Curie order-disorder transition (Tc) of magnetic domains [1]. However, this explanation is not based on solid experimental facts, so this is the goal of this series to evidence more structural aspects taking into account topoenergetic principles intensively and extensively applied to a large variety of systems in transformation (see this bulletin). A series of commercial PTC thermistors were analyzed in the previous note [2] by temperature dependence of electric resistance and their topoenergetic significance. Unfortunately, their composition and processing conditions are not available in view to correlate them with obtained results as in other similar cases.

Combined/simultaneous Differential Thermal Analysis (DTA) and electric measurements are thoroughly analyzed and retrieved in the present note in view to evidence the correlation between electric and thermal effects taking into account that calorimetry brings important structural information on transforming processes. It is considered one PTC specimen from the above mentioned commercial series, namely PTFL04BH471Q2N34B0 with Tc around 60 ^{0}C.

Experimental: Figure 1 shows the basic schematic of electric measurements and Figure 2 shows the basic assembly for combined measurements. It shows the differential thermocouple and the TO92 capsule of LM35CZ temperature sensor. All these are fixed on a rubber stopper on which a heating aluminum cylinder with non-inductive mantle will be applied (not shown). Constant and reproducible heating and cooling rates are realized by proper thermal insulation and dc voltage. All three signals (T, DTA and Uout) are previously adjusted in view to be measured by Picolog data logger with 20 bit resolution, 1 second reading rate on ±1.25 V range. Picture in Figure 3 shows the final experimental disposition with significance of the main connections. The reference probe is chosen a ceramic capacitor with very close mass and dimensions with the PTC specimen. Both of them were tightly connected on thermocouple by using thermally shrinking tubes.

Results: Figures 4-6 show the electric and DTA results obtained for three values of Us up to 1 V and Gain =1 of DTA signal (thermocouple directly connected to data logger). Cooling thermograms better evidence an exothermal process around Tc. Figures 8-12 show cooling DTA results with Us = 0.967 mV and different Gain values by using an amplifier with LM358. The linear parameters mentioned on the graphs represent the baseline for T < Tc.

Figures 13-15 show the correlation of these parameters according to general topoenergetic significance. Gain results to be the governing potential for this series of cooling experiments.

Figures 16-19 show the heating and cooling DTA results for higher Us voltages in view to evidence the influence on exothermal processes. Uout is properly adjusted in view to be under admitted limit of ±1.25 V. Important to observe that: (i) Us strongly influences the amplitude of exothermal processes; (i) for both heating and cooling experiments, the processes around Tc are exothermal, but with different shapes; (iii) DTA signals are strongly noised as directly connected and through amplifier, even their amplitude are enough high and the similar experiments on different transforming systems showed smooth signals. Figures 20, 21 show the hysteresis effect of Tc.

Conclusion: The fact that for both heating and cooling experiments transitions are exothermal and taking into account that both DTA and electric measurements show reversible structure transformations, leads to conclusion that these involve an inductive element as in polymers [3] and aqueous solutions [4].

Refeences

[1] C. Kittel, Introduction to Solid State Physics, John Wiley & Sons (1986, 6th edn)
[2] G.Dragan, Structural aspects of temperature phase transition in PTC-thermistors. I. DC electric measurements, GDF Databanks Bull., 24(6) 2020.
[3] G. Dragan, Amorphous-crystalline coupling in polyethylene, Rev. Roumaine Chim., 26(9,10) , 1315-1326 (1981).
[4] G.Dragan, Mental field-water interaction as evidenced by Isothermal Convection Flow Calorimetry (ICFC)., GDF Databanks Bull., 18(2) 2014.

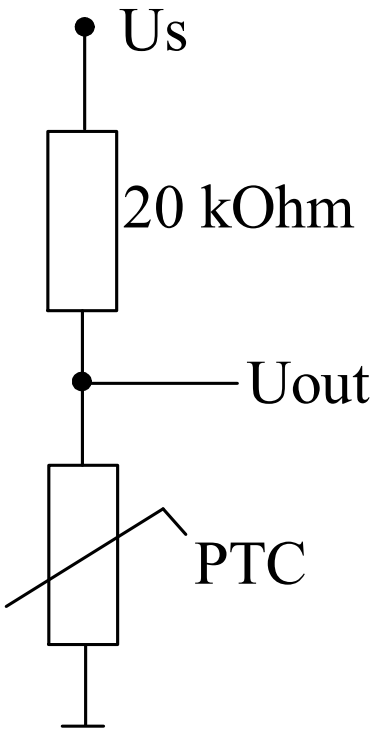


Figure 1. Electric schematic for evidencing Curie transition in Uout(T).

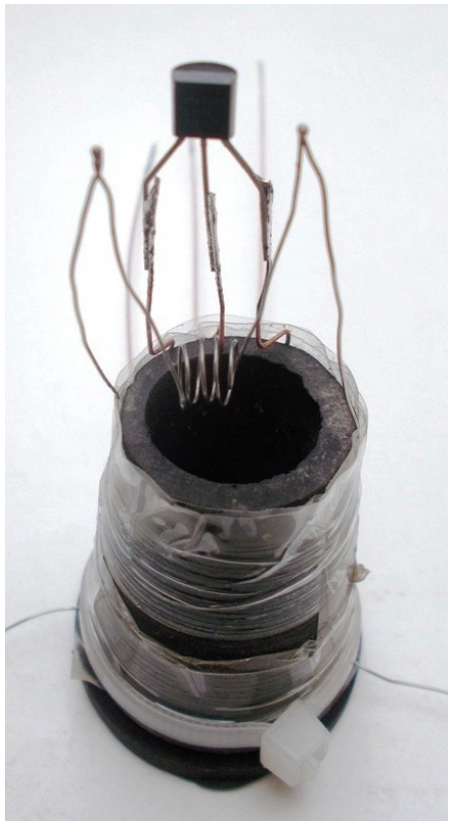


Figure 2. Basic assembly for combined DTA & electric measurements (see the test).

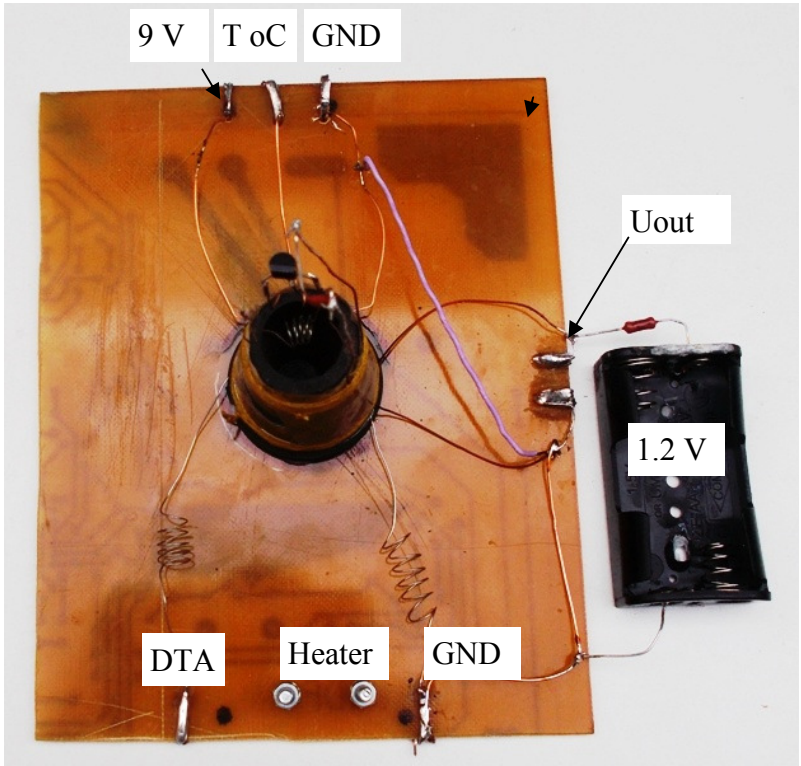
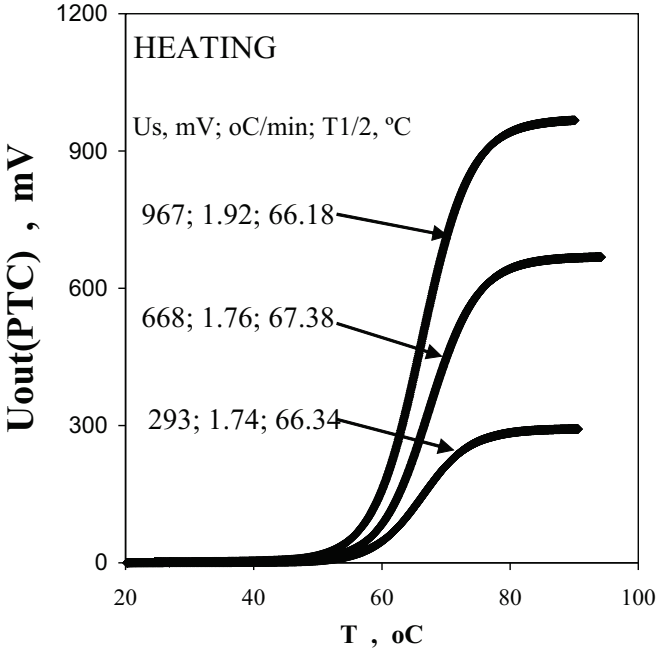


Figure 3. Overall assembly for combined measurements with significance of main connections (see the text).



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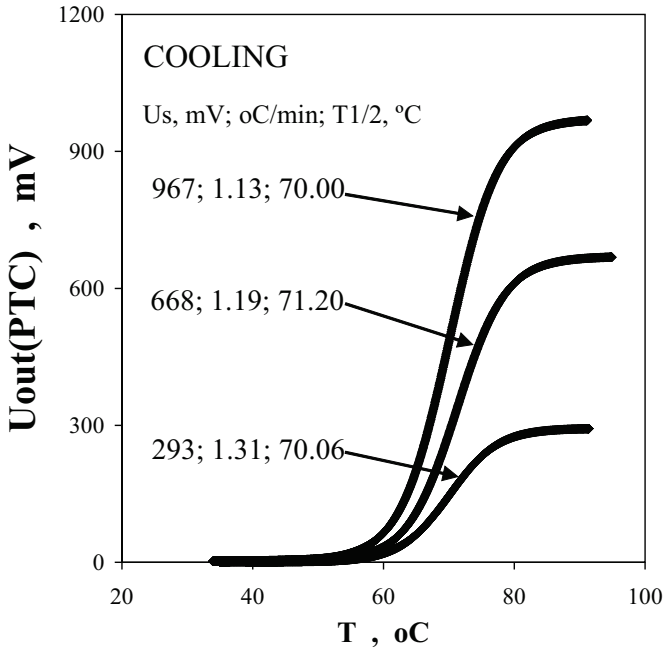

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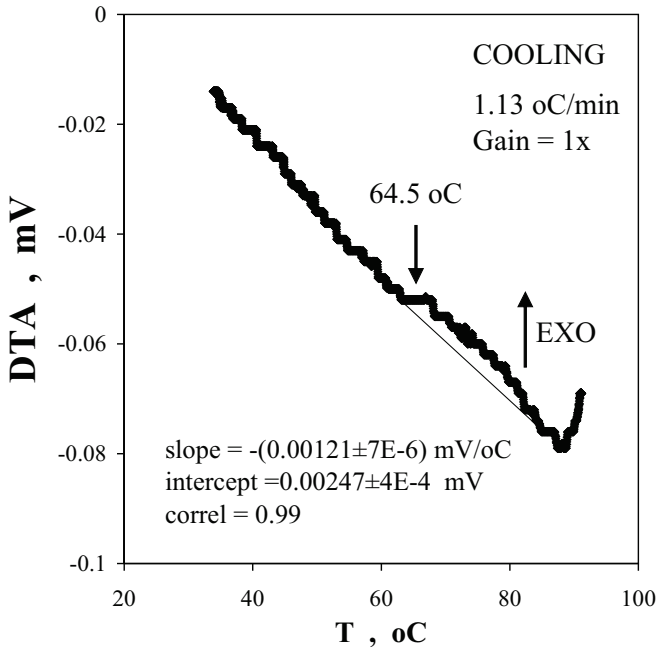

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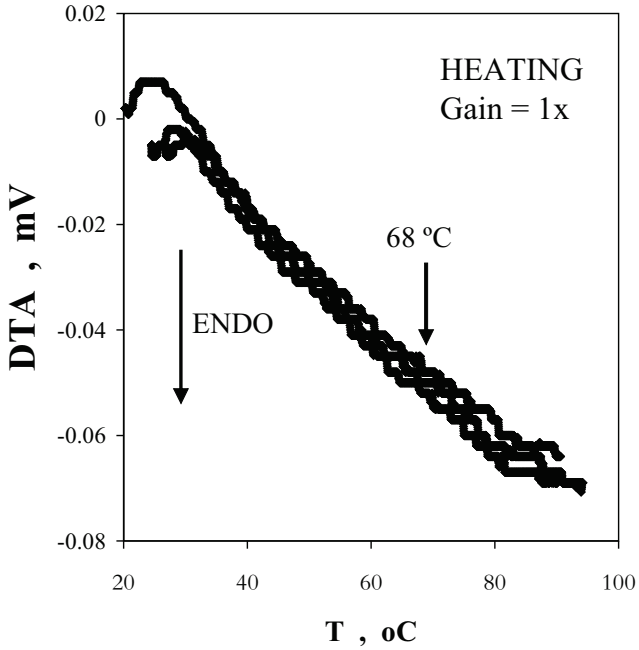

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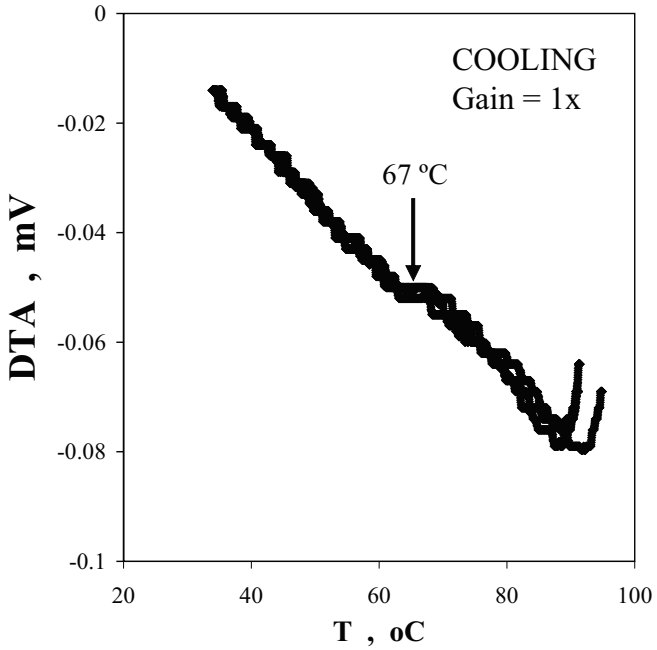

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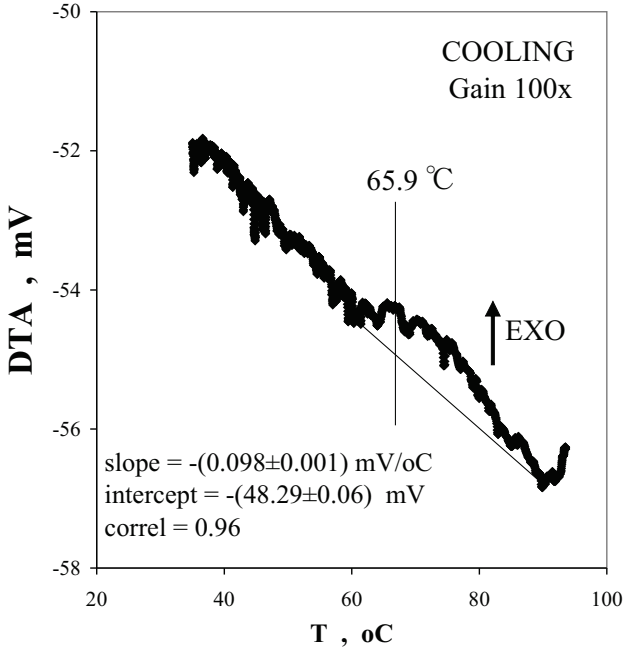

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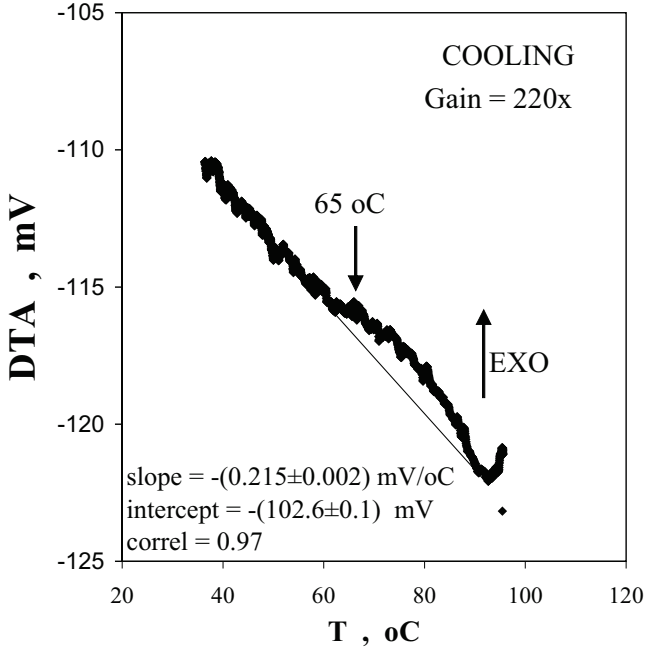
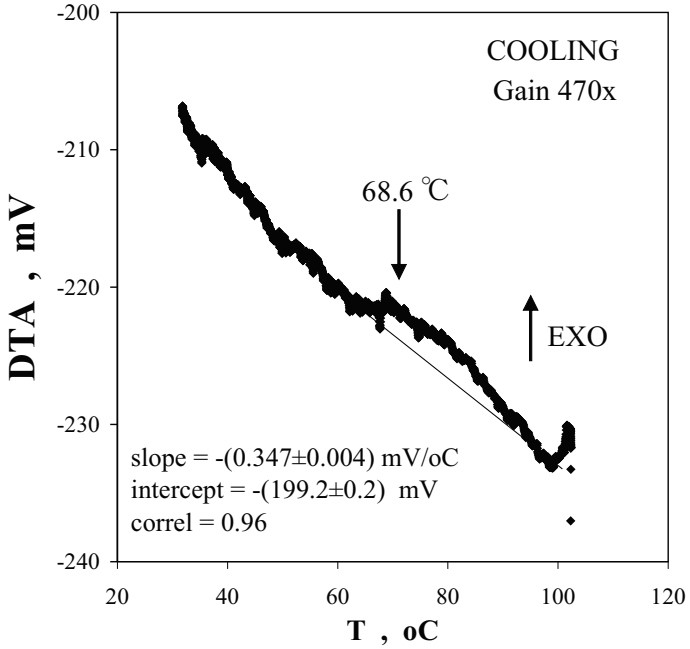


Figure 10.



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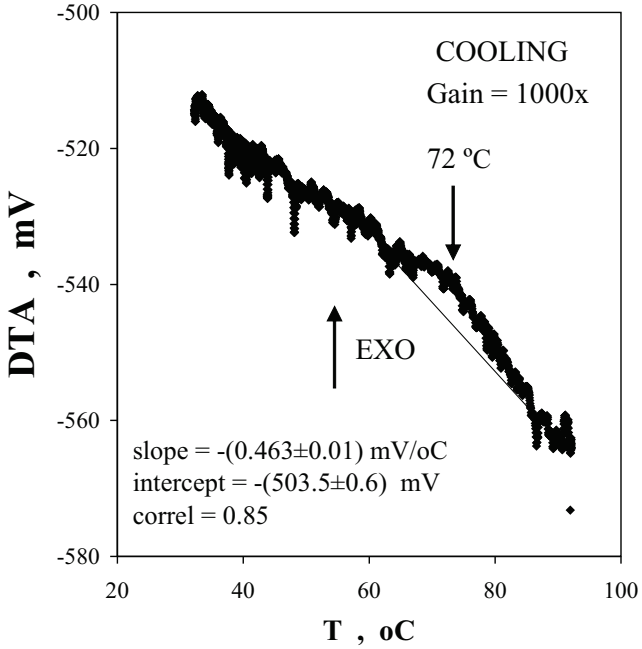

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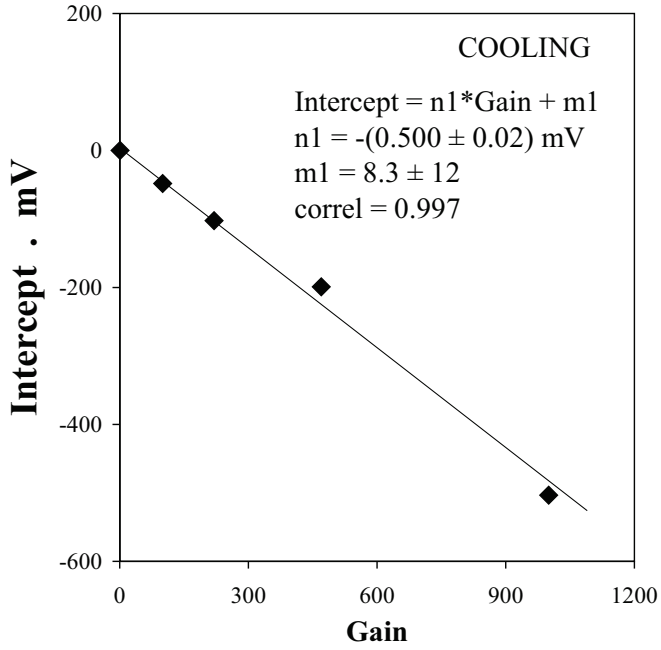

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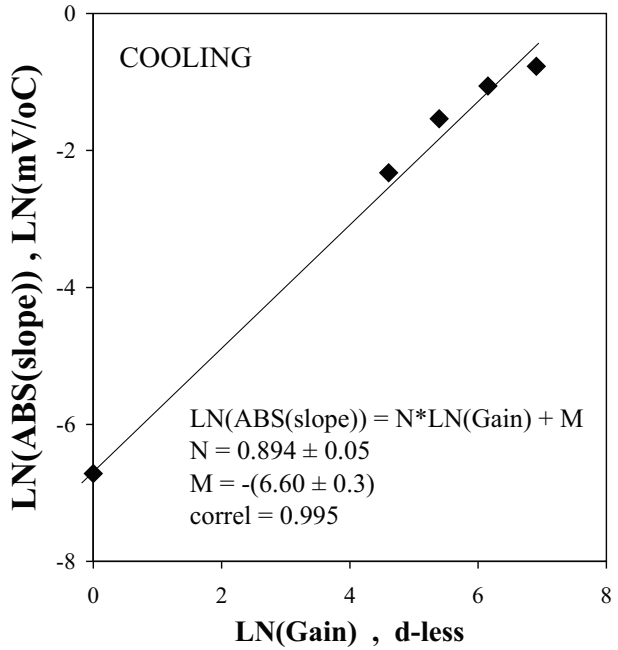

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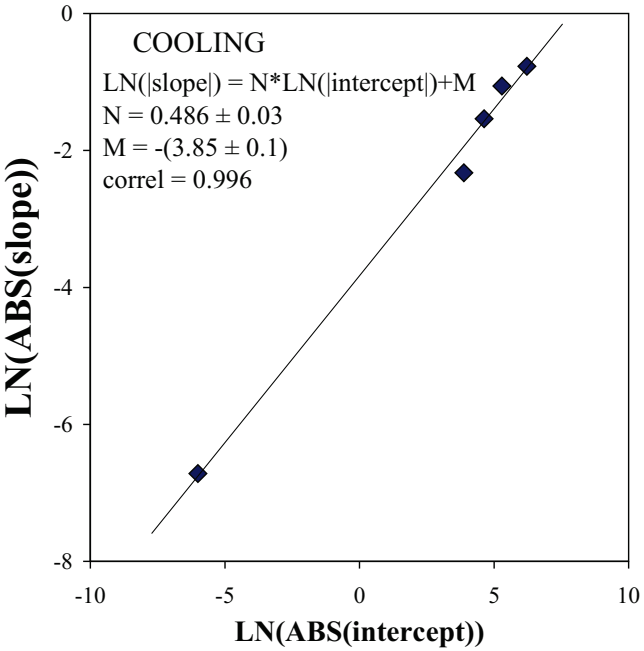

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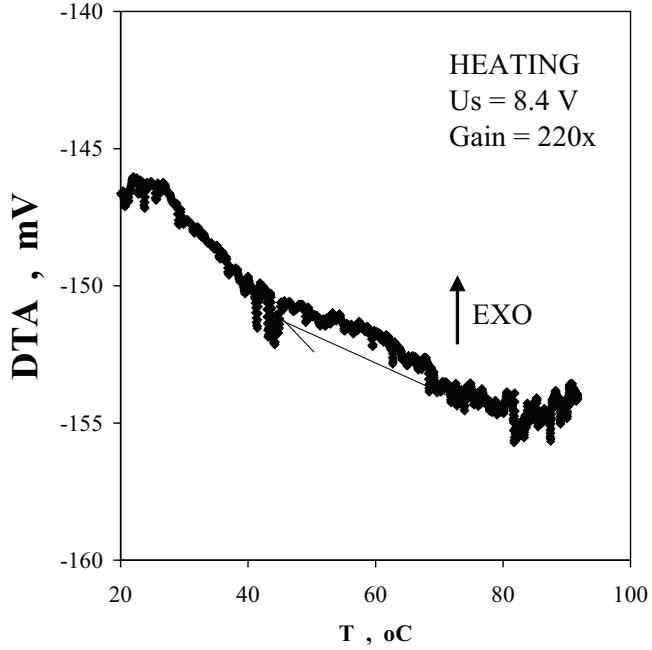

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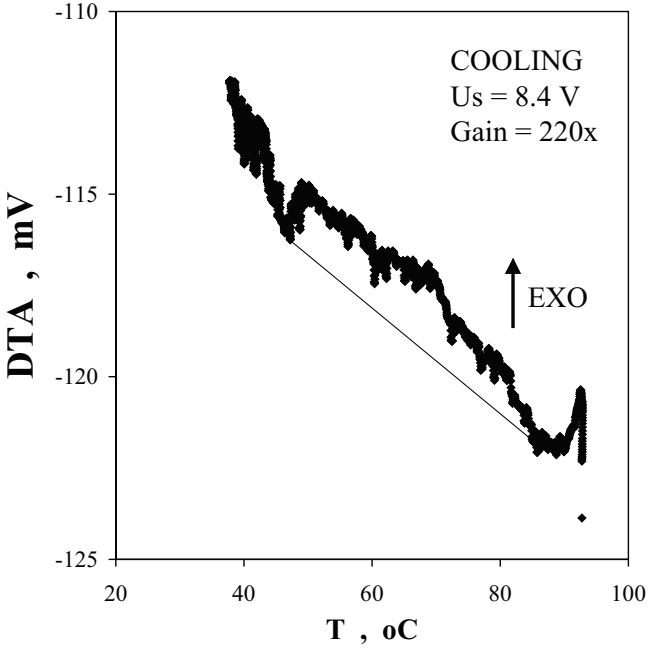

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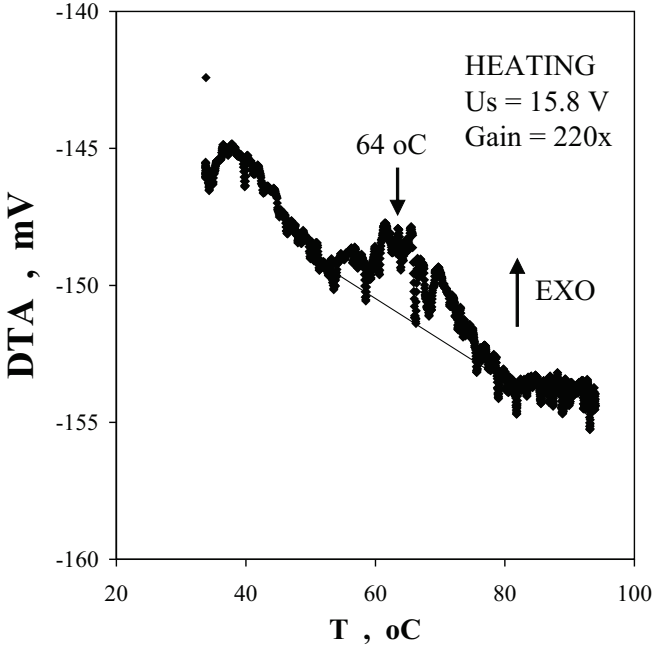

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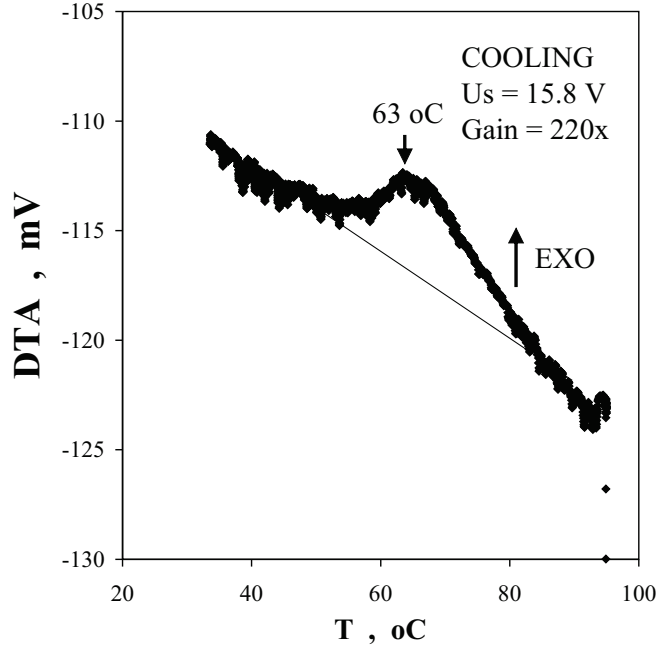

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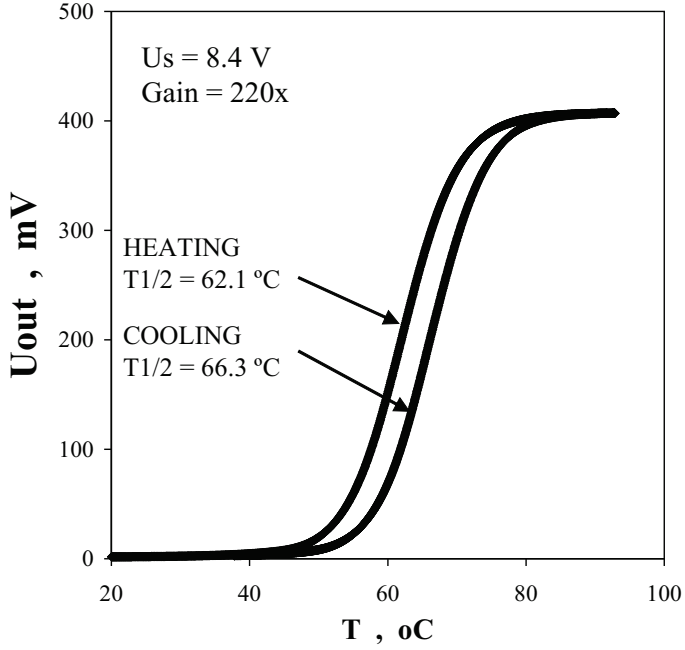

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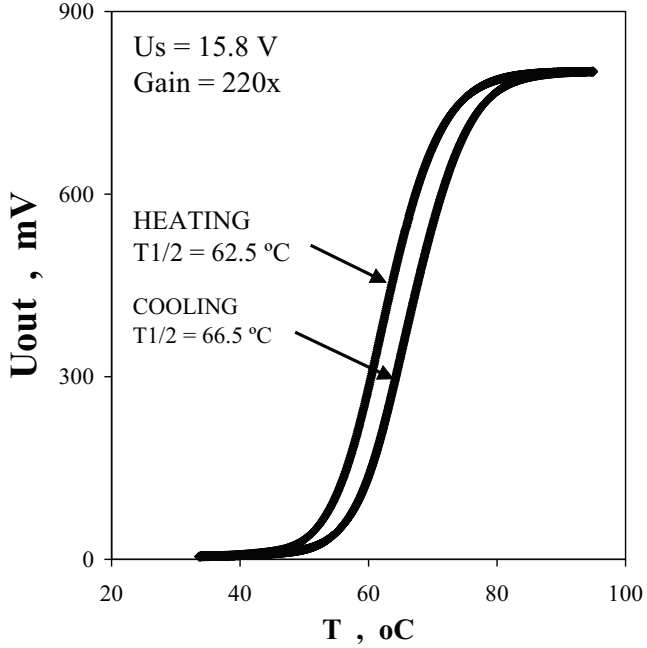

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https://www.morebooks.de/store/gb/book/composite-structure-of-human-mind/isbn/978-613-9-45072-5

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Chapter 1

Foreword

Miguel de Cervantes Saavedras:
„*Experience is the mother of all sciences”*

My deep concern is that the present book will not affect in any way human society, although I tried to point out arguments about the next imminent nuclear conflict mainly caused by continuous and accelerated degradation of human mind in direct correlation with uncontrolled growth of population. Survivors will be only ones with properly prepared minds. These two facts are striking evidences for any one, no matter education and place on the planet Earth. The solution I propose is to permanently testing and improving our mind. Its name is HuPoTest I experienced and developed continuously for more than 50 years. Human mind is our “crazy horse” which no individual succeed to completely master during entire life. The main problem is not that there are bad guys and good guys, but it is practically impossible to know them. The only solution is to take care of our own mind. After a long and intense experience face-to-face on a large variety of individuals with HuPoTest, I established that there are 4 main categories: (i) dominating; (ii) dominated; (iii) independent and (iv) not able to perform HuPoTest. The results are not available for ever, because they can transform instantly between them (flip-flop character). The first two are dependent each other, permanently involved in conflicts up to crime and suicide. The independent ones avoid any conflict and live in honest conditions. People not able to perform HuPoTest have their minds dominated by destructive emotions. Human mind is in permanent activity, so that conscious activity is perturbed by emotions. This is the main point of the present book: to reveal the composite structure of human mind by the existence of the active component involved in coherent thinking and an inert one perturbing the conscious activity.

I invite any one who will decide to try HuPoTest to contact me for help without any obligation.

Bucharest, February 2019

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publications	● >100 scientific papers ● >70 scientific communications ● 17 patents ● 6 books
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Year	VOL	NO	Content (titles)	$*)
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			practice.(Plenary lecture at the 19th SRH National Congress, 21-22 September 2004, Bucharest, Romania)	
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2017	21	4	HuPoTest – 50 years of continuous research and attempts to make it as efficient self-evaluation and improving procedure for mental state HuPoTest – read this first Message to the organizers of the snn2016 Conference (http://snn2016.snn.ro/) and to all whom it may concern HuPoTest – an efficient test and training procedure for mental and health state (Abstract for World Congress of Mental Health, New Dehli, INDIA, November 2-5, 2017) Interaction of unpolarized capacitors with Human Mental Field and Bio-Fields. VII. Dielectrics with high oriented crystalline structure.	F
2017	21	5	Interaction of unpolarized capacitors with Human Mental Field and Bio-Fields. VIII. Dielectrics with high oriented crystalline structure. HuPoTest – data base correlations revealing mental pattern.	F
2017	21	6	Upon some features of global economic structure Eurovision song contest 2017	F
2017	21	7	HuPoTest – proper training and creation of simple database in view to evaluate mental improvement HuPoTest – project for the complete software available for any individual user	F
2017	21	8	Global warming facts Topoenergetic structure of trees ramification	F
2017	21	9	HuPoTest – simple Matlab software for time measurements HuPoTest – preliminary tests on PUT response reaction	F
2018	22	1	Interaction of unpolarized capacitors with Human Mental Field and Bio-Fields. IX. Measurements on 1st June 2017- 9th January 2018.	F
2018	22	2	Interaction of unpolarized capacitors with Human Mental Field and Bio-Fields. X. Further estimations on 1st June 2017- 9th January 2018. HuPoTest – new tests on PUT response reaction HuPoTest – read this first before use it (updated) HuPoTest – an efficient test and training procedure for mental and health state (abstract sent to the International Congress of Royal College of Psychiatrics - 2018)	F
2018	22	3	Estimation of global warming by differential calorimetric procedure. I. Experimental principles, preliminary results and their significances.	F
2018	22	4	Definition and assignment of some global uncertainties of measurements, 9th International Metrology Congress, Bordeaux, France, 18-21 October 1999, pp. 353-356. HuPoTest - errors originating from software HuPoTest – seven week mental training during Ortodox Easter Fasting. I. New rules for more realistic and efficient measurements.	F
2018	22	5	HuPoTest – seven week mental training during Ortodox Easter Fasting. II. Statistic features of particular data and their significance	F
2018	22	6	HuPoTest – seven week mental training during Ortodox Easter Fasting. III. Personal mind structure and pattern during training	F
2019	23	1	HuPoTest – up to date history HuPoTest – operating instructions HuPoTest – significance of calculated parameters HuPoTest – composite structure of mind	F
2019	23	2	Estimation of global warming by differential calorimetric procedure. II. Experimental results over 2018	F

2019	23	3	Composite structure of human mind. HuPoTest results on 5 weeks of fasting before Christmas 2018	F
2019	23	4	Interaction of unpolarized capacitors with Human Mental Field and Bio-Fields. XI. Results obtained over 2018. Book launch: Composite Structure of Human Mind	F
2019	23	5	Interaction of unpolarized capacitors with Human Mental Field and Bio-Fields. XII. New results obtained over 2018. Book launch: Composite Structure of Human Mind	F
2019	23	6	Composite structure of human mind. HuPoTest results on 7 weeks of fasting before Orthodox Easter 2019 Book launch: Composite Structure of Human Mind	F
2019	23	7	Eurovision song contest, Tel Aviv, Israel, 18 May 2019 Book launch: Composite Structure of Human Mind	F
2019	23	8	HuPoTest – 4 weeks of self evaluation, training and additional instructions Book launch: Composite Structure of Human Mind	F
2019	23	9	Composite human mind and composite human society (43rd Congress of American Romanian Academy of Arts and Sciences, ASILOMAR Conference Grounds, Pacific Grove, CA, USA, 15-17 November 2019) Book launch: Composite Structure of Human Mind	F
2020	24	1	Left-Right Bio-Balance: Calorimetric approach of human mental state I. Introductory principles and experimental details. Book launch: Composite Structure of Human Mind	F
2020	24	2	Composite structure of human mind. HuPoTest results on 5 weeks of fasting before Christmas 2019 Global warming and human mentality Book launch: Composite Structure of Human Mind	F
2020	24	3	Left-Right Bio-Balance: Calorimetric approach of human mental state II. Results on male persons under test. Book launch: Composite Structure of Human Mind	F
2020	24	4	Interaction of unpolarized capacitors with Human Mental Field and Bio-Fields. XIII. Results obtained over 2019. Book launch: Composite Structure of Human Mind	F
2020	24	5	Estimation of global warming by differential calorimetric procedure. III. Experimental results over 2019 Book launch: Composite Structure of Human Mind	F
2020	24	6	Structural aspects of temperature phase transition in PTC-thermistors. I. DC electric measurements Book launch: Composite Structure of Human Mind	F
2020	24	7	Composite structure of human mind. HuPoTest results on 7 weeks of fasting before Orthodox Easter 2020 Book launch: Composite Structure of Human Mind	F

*) F=free, AFI=ask for invoice.

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ERRATUM:

VOL.	NO.	place	CORRECT
15	2	Figure 5	P-
15	3	page 5, row 7 down-to-up	x = 0.2
22	3	Figures 4-6	Values of dTc and exchanged heat must be divided by 10
22	6	Figure 4	-N^2/M values are negative; See Figure 8 and comments in issue 23(3)
23	1	Figure 5	
23	1	HuPoTest-significance of calculated parameters	(yo, Δb)<0, Δa>0: slow reaction (yo, Δb)>0, Δa<0: impulsive reaction

I encourage readers to advice me any observation.

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