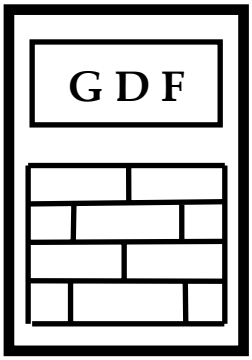
GDF DATA BANKS BULLETIN

TRESISTOR© - NTC - 1

DATA BANK OF NTC - THERMISTORS



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Content

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Ask for invoice for TRESISTOR©-NTC-1

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TRESISTOR© data banks of materials with thermally driven electric and magnetic properties.

TRESISTOR©-NTC-1 is the first data bank in the series describing a selection of 141 NTC thermistors from 7 manufacturers based on Arrhenius and Universal parameters obtained by retrieval of R(T) values reported on their websites.

The sources of NTC thermistors analyzed are given in Table 1 and a sample of data for each thermistor from data banks is given in Table 2.

The complete description of Arrhenius and Universal procedures and the significances of the resulted parameters were given in the previous study (NTC-thermistors-1: GDF Databanks Bull., Vol.10, No.1 (2006)).
TRESISTOR©-NTC-1 data bank is issued in Excel under Windows®-XP, structured in 3 files (A,B,C) with datasheets devoted to each manufacturer. The compact disc includes also the above mentioned study and other files with comments on the obtained data.

Both Arrhenius and Universal representations take into consideration the overall temperature range for which R(T) values were reported. Mathematical retrieval is based on an original optimization method of residuals with values of Pearson coefficient better than 0.999 (Arrhenius) and 0.9999 (Universal). Its high efficiency in comparison with other data fit procedures results in low values of uncertainties, good separation of the analyzed thermistors and high correlation in phylogenic groups.

Figure 1 shows the first Arrhenius phylogeny resulted as common for the two series of thermistors and practically no differences in the overall group.
Figure 2 compares the values of activation energy estimated in this data bank with B parameter estimated by manufacturer on a limited range of temperature. The slope estimated by linear regression approximates the universal gas constant, but showing a pronounced dispersion of the points.
Figure 3 shows the first Universal phylogeny expressed by N(M) revealing both differences of individuals in each group and of the two series of thermistors.
Figure 4 shows the first Universal phylogeny expressed by To(-M/N) which reveals more important structural differences in the considered thermistors.

TRESISTOR©-NTC-1 data bank substantiates once again the conclusions given in the above mentioned study in view to establish higher phylogenies and new properties for further applications of these materials.

Table 1. NTC thermistors analyzed according to the Arrhenius and Universal representations. Period means the period of time when data were taken from websites. Total of items: 141.

Manufacturer	website	period	no. of items
Ametherm	www.ametherm.com	Oct. 2006	12
Thermistor	www.thermistor.com	July 2007	11
YSI	www.ysitemperature.com	Oct. 2006	10
Betatherm	www.betatherm.com	Oct. 2006	11
Thermometrics	www.thermometrics.com	Oct. 2006	10
Omega	www.omega.com	Oct. 2006	5
Semitec	www.semitec.co.jp	June 2007	82

Table 2. Sample of data given in TRESISTOR© - NTC-1 databank issued in Excel (Windows® XP).

manufacturer		Semitec
code	*	103ET
R25, kOhm	*	10
B, K	*	3250
E , kJ/mol		-26.07
u (E) , kJ/mol		0.04
Ka , dless		-10.54
u(Ka), dless		0.02
N		-6.6376
u(N)		0.00002
M		34.73
u(M)		0.005
To, K		111.2
u(To) , K		0.3
n		131
Tmin, K		233.15
Tmax, K		363.15

* data given by manufacturer; u = standard deviation (standard uncertainty with confidence level of 68.27%) and n is the number of R(T) values given by manufacturers and considered in actual estimations. For confidence level of 95% u values must be multiplied with a factor of 1.96.

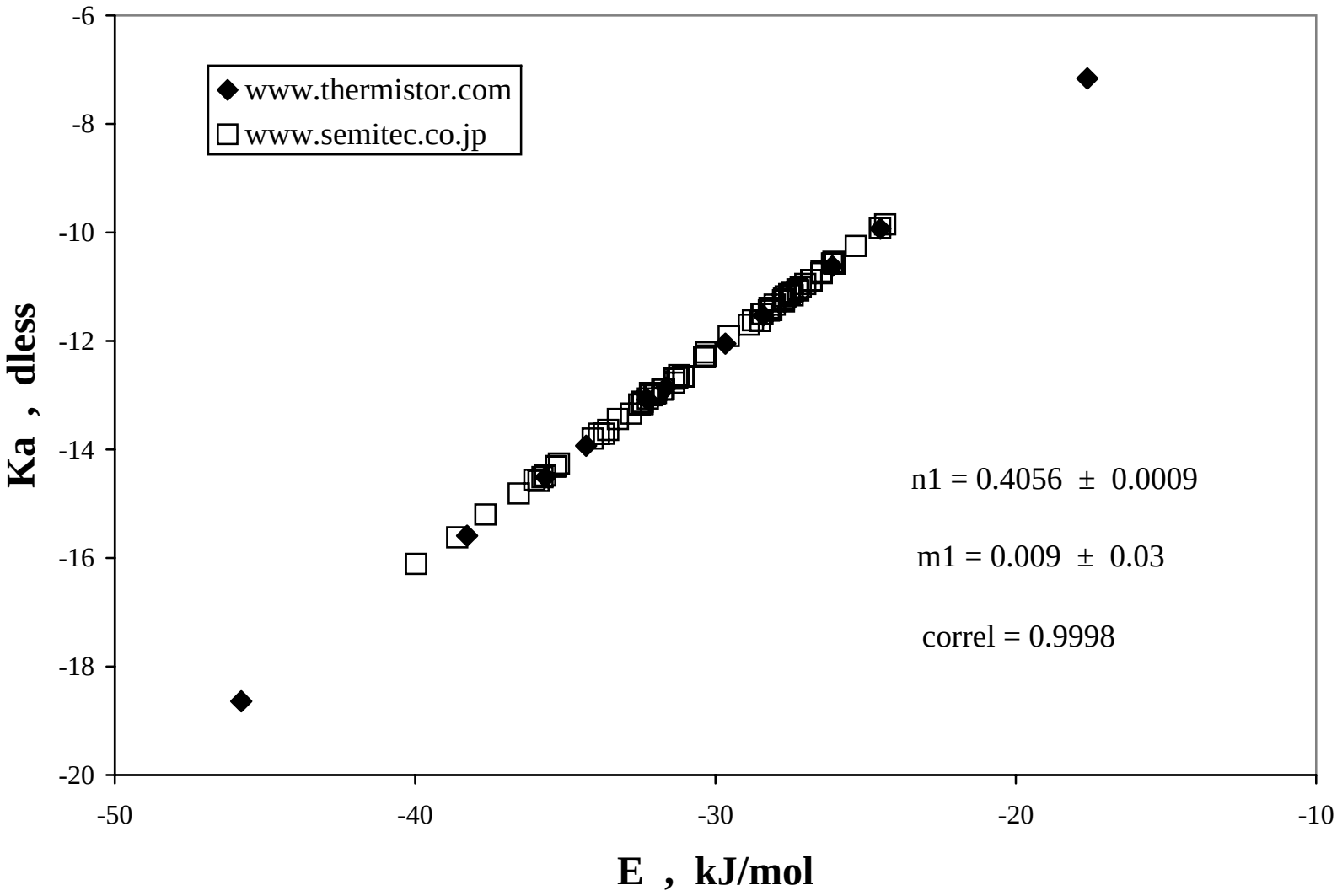

Figure 1. First Arrhenius phylogeny of two series of thermistors in TRESISTOR-NTC-1.

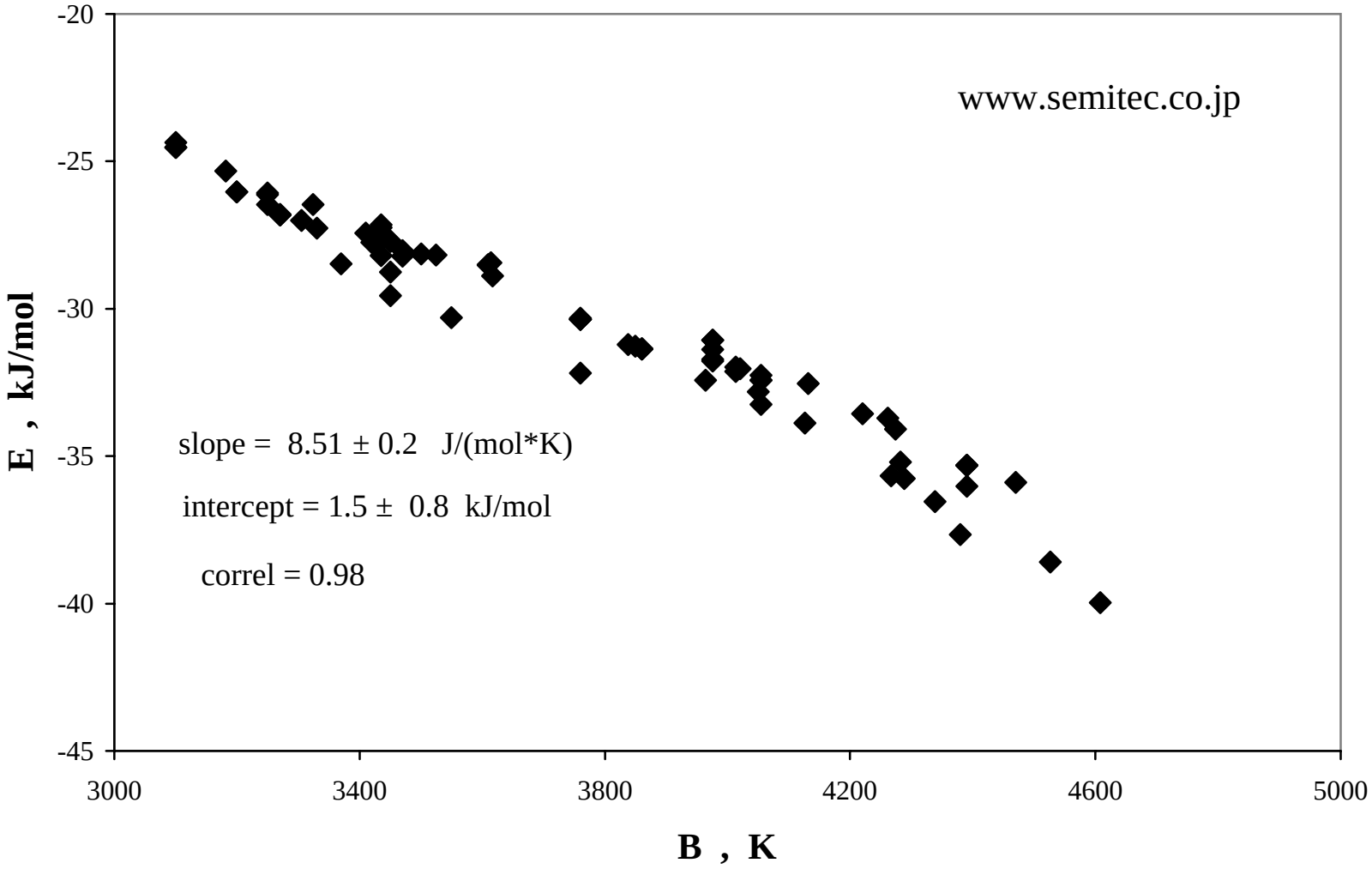

Figure 2. Comparison of E values (actual data bank) with
B values for a series of NTC-thermistors.

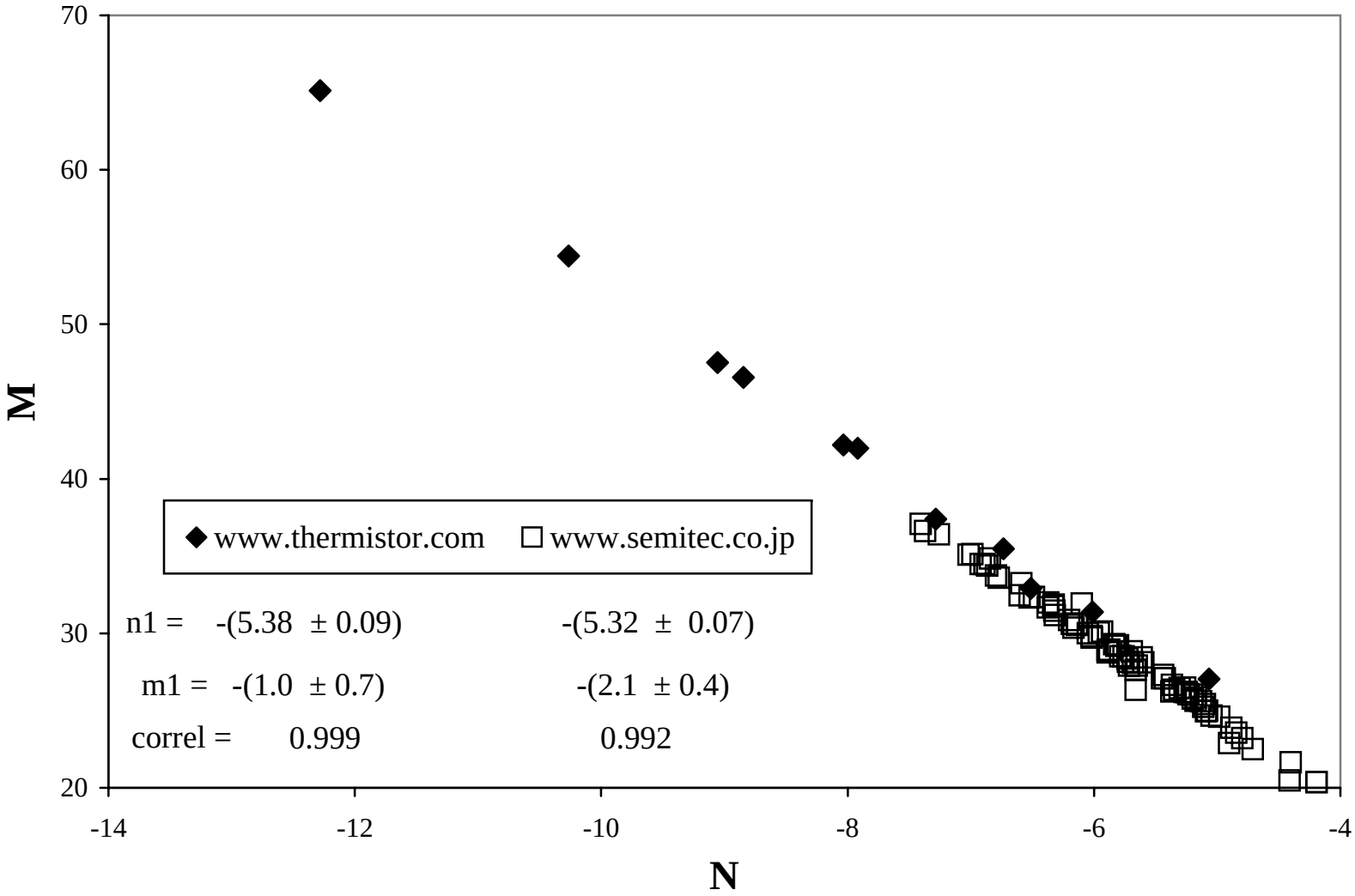

Figure 3. First Universal phylogenies N(M) for two series of thermistors in TRESISTOR-NTC-1.

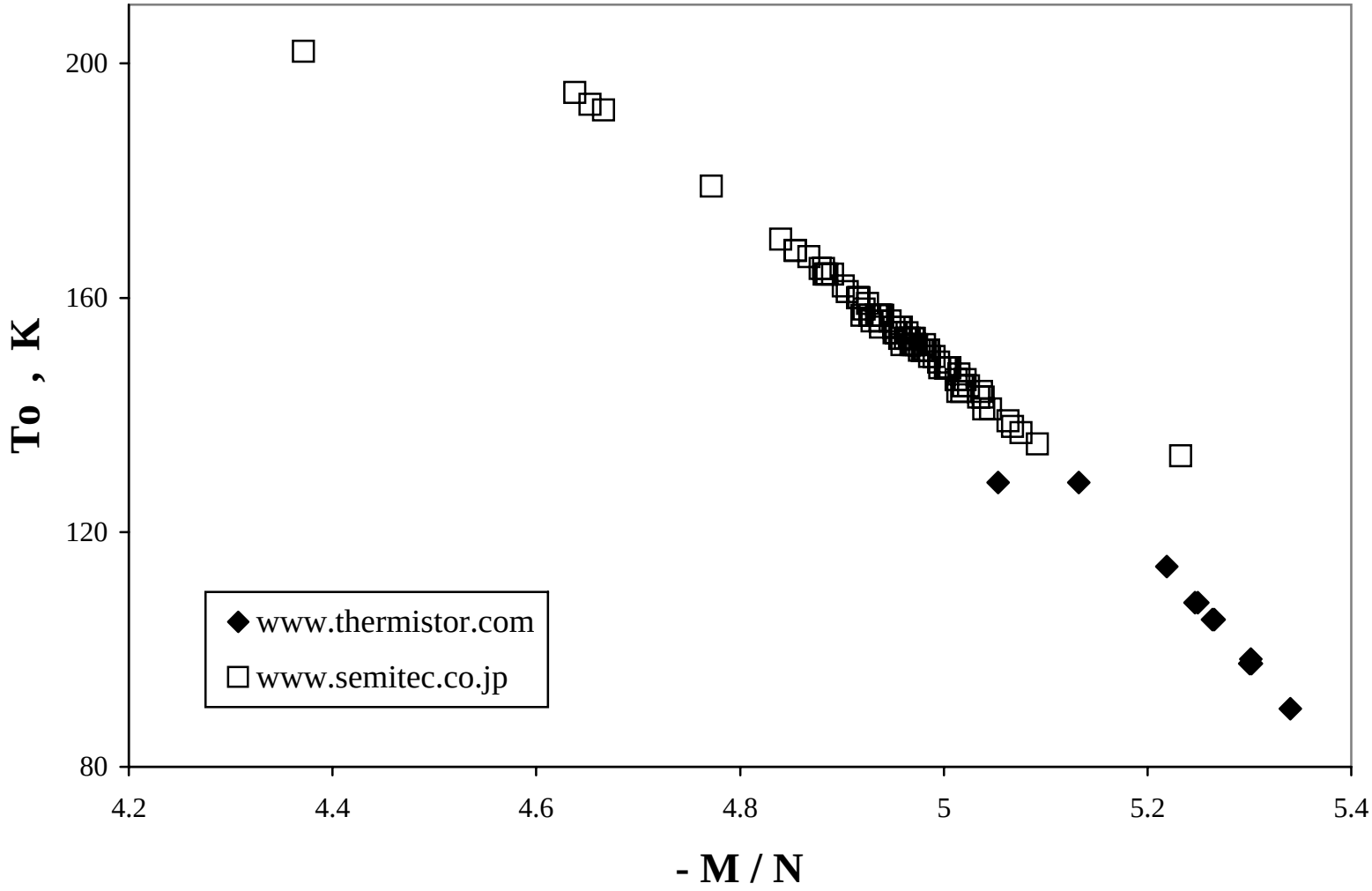

Figure 4. First Universal phylogenies To(-M/N) for two series of thermistors in TRESISTOR-NTC-1.

Previous issues of GDF DATABANKS BULLETIN

Year	VOL	NO	Content (titles)	$*)
1997	1	1	Editorial: Databanks – the compulsory language. LOGKOW – a Databank of evaluated octanol-water partition coefficients (James Sangster). Solubility behavior introducing topoenergetic working principles. Comments on 1-octanol-water partition of several n-alkane related series.	F
1997	1	2	Guide of good practice in metrology (Romanian)	AFI
1998	2	1	Editorial: socio-psychological implications in creation and utilization of a databank (Ioan-Bradu Iamandescu); Behavior in vapor-liquid equilibria (VLE): I. Structural aspects; Behavior in vapor-liquid equilibria: II. Several structures in databanks; Symposium on VDC-4 held on 30 October 1997 at Lubrifin-SA, Brasov (Romania).	F
1998	2	2	Practical course of metrology (Romanian)	AFI
1998	2	3	DIFFUTOR-01: Thermally driven diffusion in pure metals	AFI
1998	2	4	VAPORSAT-01: Databanks of thermally driven VLE. The first 100 simple molecules	AFI
1999	3	1	Editorial: New trends in material science: nanostructures (Dan Donescu) DIFFUTOR: Databanks of diffusion kinetics. VAPORSAT: Databanks of vapor-liquid separation kinetics.	F
1999	3	2	Discussions on Applied Metrology	AFI
2000	4	1	Editorial: Laboratory accreditation and inter-laboratory comparisons (Virgil Badescu) Doctoral Theses – important data banks. GDF intends to open new series of experiments on thermo-physical properties. Some comments on uncertainty: global budget and DFT analysis. Events: The 9th International Metrology Congress, Bordeaux, France, 18-21 October 1999.	F
2000	4	2	Measurement and Calibration.	AFI
2001	5	1	Editorial: Metrology ensures moral and technological progress. Topoenergetic aspects of amorphous-crystalline coupling. I. Composite behavior of water and aqueous solutions (paper presented at nanotubes and Nanostructures 2001, LNF, Frascati, Rome Italy, 17-27 October 2001). Events: Nanotubes and nanostructures 2000.School and workshop, 24 September – 4 October 2000, Cagliari, Italy.	F
2001	5	2	Editorial: Viscosity – a symptomatic problem of actual metrology. Visco-Dens Calorimeter: general features on density and viscosity measurements. New vision on the calibration of thermometers: ISOCALT® MOSATOR: Topoenergetic databanks on molten salts properties driven by temperature and composition.	F

continued

Year	VOL	NO	Content (titles)	$*)
2002	6	1	MOSATOR-01: Topoenergetic databanks for one component molten salts; thermally driven viscosity and electrical conductance.	AFI
2002	6	2	Editorial: HuPoTest - Operator calibration or temporal scale psychic test. MOSATOR: topoenergetic databanks of one component molten salts; thermally driven viscosity and electrical conductance.	F
2002	6	3	Editorial: Quo vadis Earth experiment? ISOCALT® : Report on metrological tests	F
2003	7	1	Editorial: Time – an instrument of the selfish thinking. 1st NOTE: Homoeopathy: upon some efficient physical tests revealing structural modifications of water and aqueous solutions. I. Mixing experiments.	F
2004	8	1	Metrological verification and calibration of thermometers using thermostats type ISOCALT® 21/70/2. Metrological verification and calibration of thermometers using thermostats type ISOCALT® 2.2R.	F
2004	8	2	Aspects of correct measurements of temperature. I. measurement of a fixed point according to ITS-90. Physics and Homoeopathy: some physical requirements for homoeopathic practice.(Plenary lecture at the 19th SRH National Congress, 21-22 September 2004, Bucharest, Romania)	F
2005	9	1	AWARD for ISOCALT® at the International Fair TIB-2004, October 2004, Bucharest. ISOCALT® 3/70/21 was awarded in a selection of 20 products by a commission of experts from the Polytechnic University of Bucharest. Upon some aspects of temperature measurements. (12th International Metrology Congress, 20-23 June 2005, Lyon, France)	F
2005	9	2	A new technique for temperature measurement and calibration. National Society of Measurements (NSM). Important warning for T-calibrator users: MSA has chose metrology well calibrators from Fluke (Hart Scientific).	F
2005	9	3	Universal representation of Cancer Diseases. 1. First sight on NSW-2003 report. Universal representation of Cancer Diseases. 2. UK cancer registrations on 1999-2002. Vital Potential can estimate our predisposition for cancer diseases.	F
2006	10	1	NTC – thermistors -1	AFI
2007	11	1	HuPoTest - 40 years of continuous research Basic rules for preventing and vanishing cancer diseases Climate change = change of mentality Hot nuclear fusion – a project of actual mentality	F
2007	11	2	MT – Introduction to Mental Technology HuPoTest – general procedure, assignments of results, specimen of complete test , order and obtain your complete HuPoTest report	F

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

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publications	● 90 scientific papers ● 70 scientific communications ● 17 patents ● 5 books
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