Working Party on International Nuclear Data Evaluation Cooperation
NEA Headquarters, Paris, France, May 21-24, 2013

"Rosatom" Standard Reference Data System

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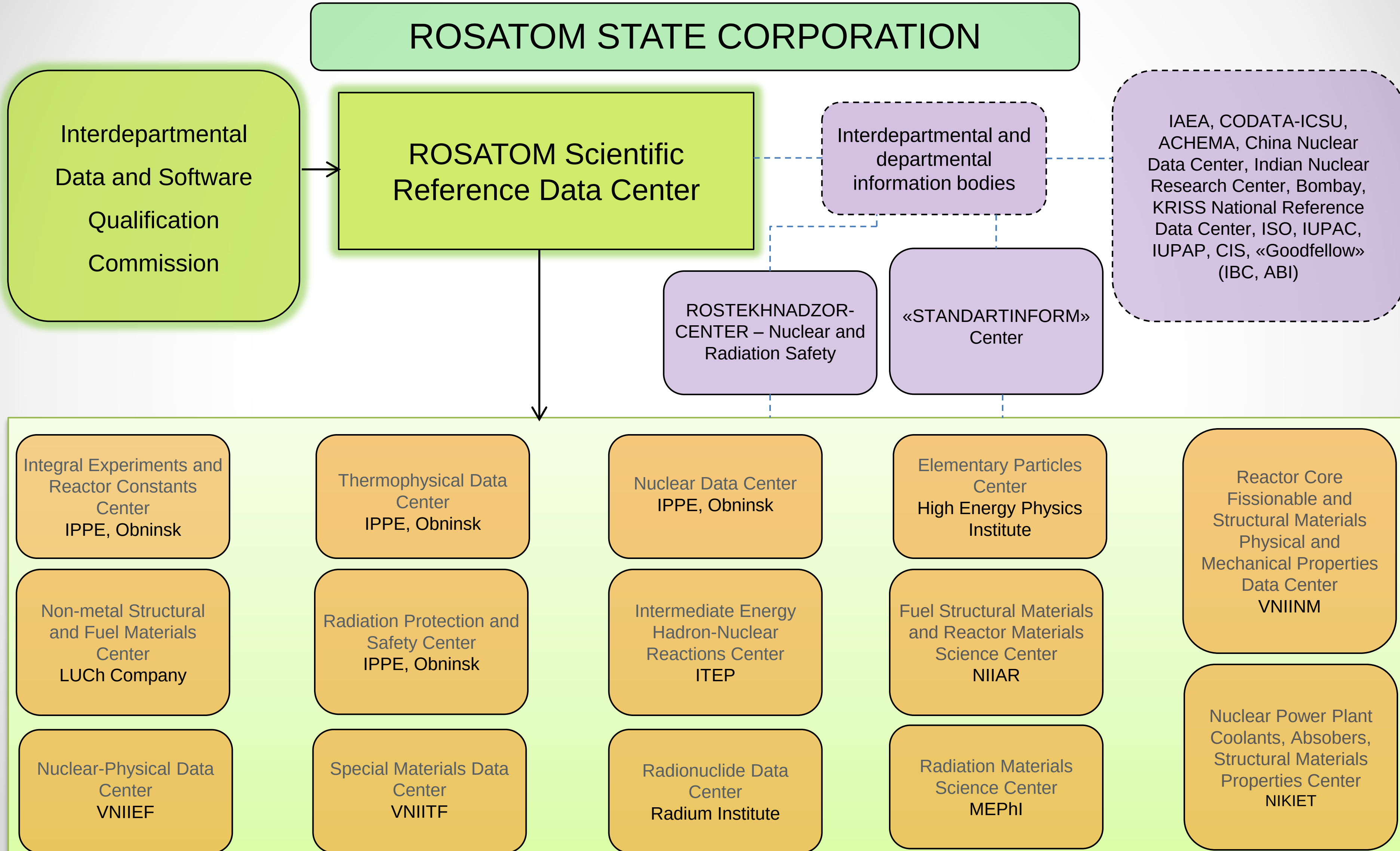
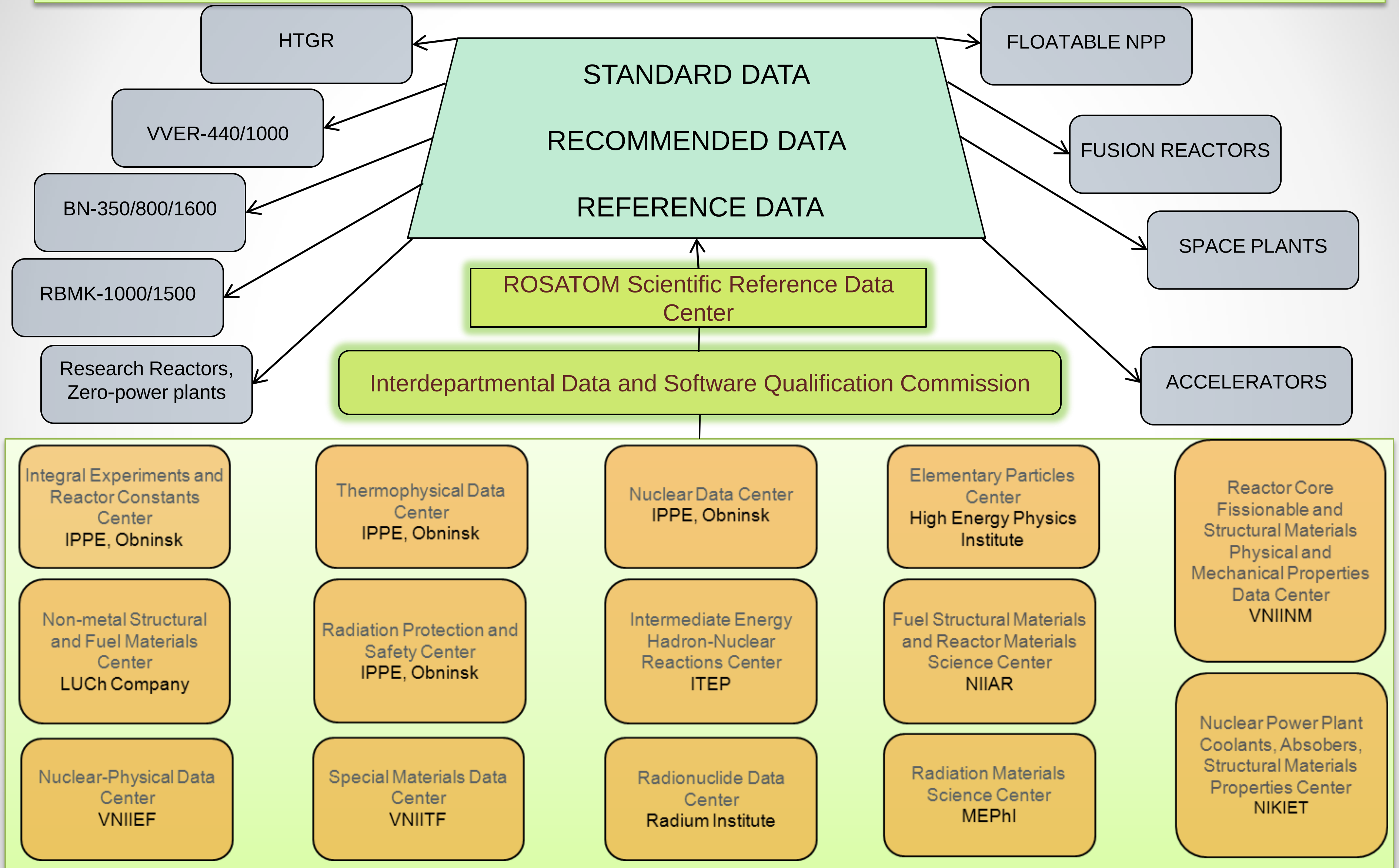
ROSATOM STANDARD REFERENCE DATA SYSTEM FUNCTIONAL STRUCTURE



Data Processing by Standard Reference Data System Structures to be used by Consumers in Nuclear Projects



Radionuclide Data Center
Radium Institute

- Decay Data Evaluation Project (United Kingdom, India, China, Russia, Romania, USA, France) has developed the recommended decay data for about 200 nuclides (as on May 2013).

  - Radionuclide Data Center contribution is 40 nuclides (11 nuclides (γ-standards), 23 actinides, 6 β-emitters).
- IAEA Coordinated Research Projects

  - "Updated Decay Data Library for Actinides " (2005 – 2009).

  - "Update of X Ray and Gamma Ray Decay Data Standards for Detector Calibration and Other Applications".

References:

•M.-M. Be, V. Chiste, C. Dulieu, X. Mougeot, E. Browne, **V. Chechev**, **N. Kuzmenko**, F. Kondev, A. Luca, M. Galan, A. Arinc, and X. Huang. Table of Radionuclides (Vol.5 – A = 22 to 244). / Sevres: Bureau International des Poids et Mesures, 2010.

•M.-M. Be, V. Chiste, C. Dulieu, X. Mougeot, **V.P. Chechev, N.K. Kuzmenko**, F.G. Kondev, A. Luca, M. Galan, A.L. Nichols, A. Arinc, A. Pearce, X. Huang, B. Wang, Table of Radionuclides (Vol. 6 - A = 22 to 242) // Monographie BIPM-5, vol.6, Bureau International des Poids et Mesures (2011).

•**V.P. Chechev**, Decay Data Evaluation Project (DDEP): Evaluation of the main 243Cm and 245Cm decay characteristics. Appl. Radiat. Isot. 70, 1871 (2012).

Intermediate Energy Hadron-Nuclear Reactions Center

ITEP

Thin Targets Review

14621 residual nuclides were measured during 1997-2009:

Proton energy (GeV)	^{nat}Cr	^{56}Fe *	^{nat}Ni	^{59}Co	^{63}Cu	^{65}Cu	^{93}Nb	^{99}Tc	^{181}Ta	^{182}W	^{183}W	^{184}W	^{186}W	^{nat}W	^{nat}Hg	^{206}Pb	^{207}Pb	^{208}Pb	^{nat}Pb	^{209}Bi	^{232}Th	^{nat}U
	Targets																					
0.04	14	18	20				19		9					19		13	9	8	18	13		
0.07	17	21	22				28		17					31		28	29	28	28	35		
0.1	19	24	27				37	18	31					45	44	46	42	36	43	50	87	108
0.13				25	11	6										22	22	20		26		
0.15	22	25	28				46		40					53		65	65	63	63	71		
0.2				29	29	29		39		32	35	36	36		65						128	123
0.25	28	33	37				58		53					69		94	94	94	95	106		
0.4	31	37	36				64		82					83		112	112	113	116	128		
0.6	33	38	40				75		101					104		139	140	141	141	147		
0.8*	33	38	43				85	72	105	70	76	77	60	110	103	156	152	154	154	162	130	195
1.0		38						64										114				
1.2	33	39	43	41	47	54	96	67	143					155		170	170	170	171	183	214	226
1.5		38			35	36										92	93	94	93	99		
1.6	33	38	46	41	42	47	106	78	152	109	111	114	119	164		180	180	182	181	192	212	231
2.6	33	38	46	41	42	48	107	85	166					181	141	171	171	172	178	198		

* - Moreover, ^{197}Au was irradiated at 0.8GeV (101 product measured) and ^{56}Fe at 0.3, 0.5 and 0.75GeV (107 products)

Results: #839: http://www-nds.iaea.org/reports/indc-ccp-434.pdf; EXFOR Data files#: O0781, O0782, O0978-O0987, O1018-O1021

Results #2002: http://www.nea.fr/html/science/egsaatif/ISTC2002-final-report.pdf

ISTC#839-0 (1997-1998)

ISTC#839 (1999-2001)

ISTC#2002 (2002-2005)

ISTC#3266 (2006-2009)

References

- **http://www-nds.iaea.org/reports-new/indc-reports/indc-ccp/:**
  - Titarenko Yu.E., Batyaev V.F., Zhivun V.M.., *et al.* Experimental and Theoretical Study of Residual Nuclide Production in 40- 2600MeV Proton-irradiated Thin Targets of ADS Structure Materials. **INDC-CCP-0453**, IAEA, October 2011;
  - Titarenko Yu.E., Batyaev V.F., Borovlev S.P., *et al*. Measurements Relevant to Simulating Subcriticality in ADS Facilities with «Thermal» Blanket. **INDC(CCP)-0450**, IAEA, October 2009;
  - Titarenko Yu.E.,Batyaev V.F., Zhivun V.M., *et al.* Measuring the Neutron Field Characteristics of the Outside Surface of the 0.8 GeV Proton-irradiated «Thick» W-Na Target. **INDC(CCP)-0449**, IAEA, October 2009;
  - Titarenko Yu.E., Batyaev V.F., Zhivun V.M., *et al.* Measurements of the neutron field characteristics inside and on the surface of the Pb target micromodel exposed to 0.8 GeV protons. **INDC(CCP)-0448**, IAEA, October 2009;
  - Titarenko Yu.E., Batyaev V.F., Zhivun V.M., *et al.* Experimental and Theoretical Studies of the Yields of Residual Product Nuclei Produced in Thin Pb and Bi Targets Irradiated by 40 – 2600 MeV Protons. **INDC(CCP)-0447**, IAEA, October 2009;
  - Titarenko Yu.E., Konev V.N., Batyaev V.F., *et al.* Study of the multiplication and kinetic effects of salt mixtures and salt blanket micromodels on thermal neutron spectra of heavy water MAKET facility. **INDC(CCP)-0446**, IAEA, October 2009;
  - Titarenko Yu.E., Batyaev V.F., Zhivun V.M., *et al.* Experimental and Theoretical Study of the Yields of Residual Product Nuclei Produced in Thin Targets Irradiated by 100-2600 MeV, INDC(CCP)-434, IAEA, February 2001.
- **Nuclear Technology, Phys. Rev.:**
  - Titarenko Yu., Batyaev V., Butko M, *et al.* Residual radioactive nuclide formation in 0.8-GeV proton-irradiated extended Pb-target. **Nuclear Technology**, v.**168**, p.p.631-636, Dec., 2009;
  - Titarenko Yu., Batyaev V., Titarenko A.Yu, *et al.* Beam dump and local shielding layout around the ITEP radiation test facility, **Nuclear Technology**, v.**168**, p.p.472-476, Nov., 2009;
  - Titarenko, Yu.E., Batyaev V., Titarenko A.Yu, *et al.* , Cross sections for nuclide production in a ^{56}Fe target irradiated by 300, 500, 750, 1000, 1500, and 2600 MeV protons compared with data on a hydrogen target I rradiated by 300, 500, 750, 1000, and 1500 MeV/nucleon 56Fe ions **Phys.Rev. C 78**, 034615 (2008);
  - Titarenko, Yu.E., Shvedov O.V., Batyaev V., *et al.* , Cross sections for nuclide production in 1 GeV proton-irradiated ^{208}Pb. **Phys.Rev. C 65**, 064610 (2002).

Compilation in EXFOR

Nuclear-Physical Data Center
VNIIEF

International experimental data library (neutrons, charged particles, photo-nuclear data)

TRANS.F040

TRANS.F041

TRANS.F042

386 data sets

```
ENTRY            F1038    20100128                                F1038  0     1
SUBENT        F1038001    20100128                                F1038  1     1
BIB                 10          18                                F1038  1     2
TITLE      Energy levels from (p,p'), (d,p) and (d,a) reactions   F1038  1     3
           on the stable isotopes between Sc-45 and Ni-58.        F1038  1     4
AUTHOR     (J.H.Bjerregaard,P.F.Dahl,O.Hansen,G.Sidenius)         F1038  1     5
INSTITUTE  (2DENCOP)                                              F1038  1     6
REFERENCE  (J,NP,51,641,1964)                                     F1038  1     7
           #doi:10.[illegible]/0029-[illegible](64)90[illegible]-3   F1038  1     8
FACILITY   (DC[illegible]                                         F1038  1     9
INC-SOURCE The beam was momentum analysed in a 90 degr. deflectingF1038  1    10
           magnet and had an energy spread of equal 0.1% on the   F1038  1    11
           target.                                                F1038  1    12
DETECTOR   (SOLST)                                                F1038  1    13
SAMPLE     The targets were prepared either in the isotope        F1038  1    14
           separator or by vacuum evaporation. Thin (50 mu-g/cm2) F1038  1    15
           carbon backing were employed. The target thickness     F1038  1    16
           varied from 5 mu-g/cm2 to 30 mu-g/cm2; the useful      F1038  1    17
           target area was 0.5 mm*3 mm.                           F1038  1    18
ERR-ANALYS (ERR-DIG)    Data digitizing error                     F1038  1    19
HISTORY    (20100128C)                                            F1038  1    20
ENDBIB              18           0                                F1038  1    21
COMMON               1           3                                F1038  1    22
EN-RSL                                                            F1038  1    23
PER-CENT                                                          F1038  1    24
  0.2                                                             F1038  1    25
ENDCOMMON            3           0                                F1038  1    26
ENDSUBENT           25           0                                F1038  199999
SUBENT        F1038002    20100128                                F1038  2     1
BIB                  5           7                                F1038  2     2
REACTION   (24-CR-52(P,EL)24-CR-52,,DA)                           F1038  2     3
METHOD     (PHD)                                                  F1038  2     4
SAMPLE     Target enriched in 52Cr to 96% was vacuum evaporated   F1038  2     5
           from the metal or the oxide of natural element, the    F1038  2     6
           chemical purity being higher than 99.9%.               F1038  2     7
ERR-ANALYS (EN-ERR-DIG) Energy digitizing error                   F1038  2     8
STATUS     (CURVE) Fig.5                                          F1038  2     9
ENDBIB               7           0                                F1038  2    10
COMMON               3           3                                F1038  2    11
ANG        EN-ERR-DIG ERR-DIG                                     F1038  2    12
ADEG       KEV        MB/SR                                       F1038  2    13
 145.       0.0464     0.0023                                     F1038  2    14
ENDCOMMON            3           0                                F1038  2    15
DATA                 2          24                                F1038  2    16
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Table of contents:

TRANS.F041:

^{12}C – 7 reactons;

^{13}C – 6 reactons;

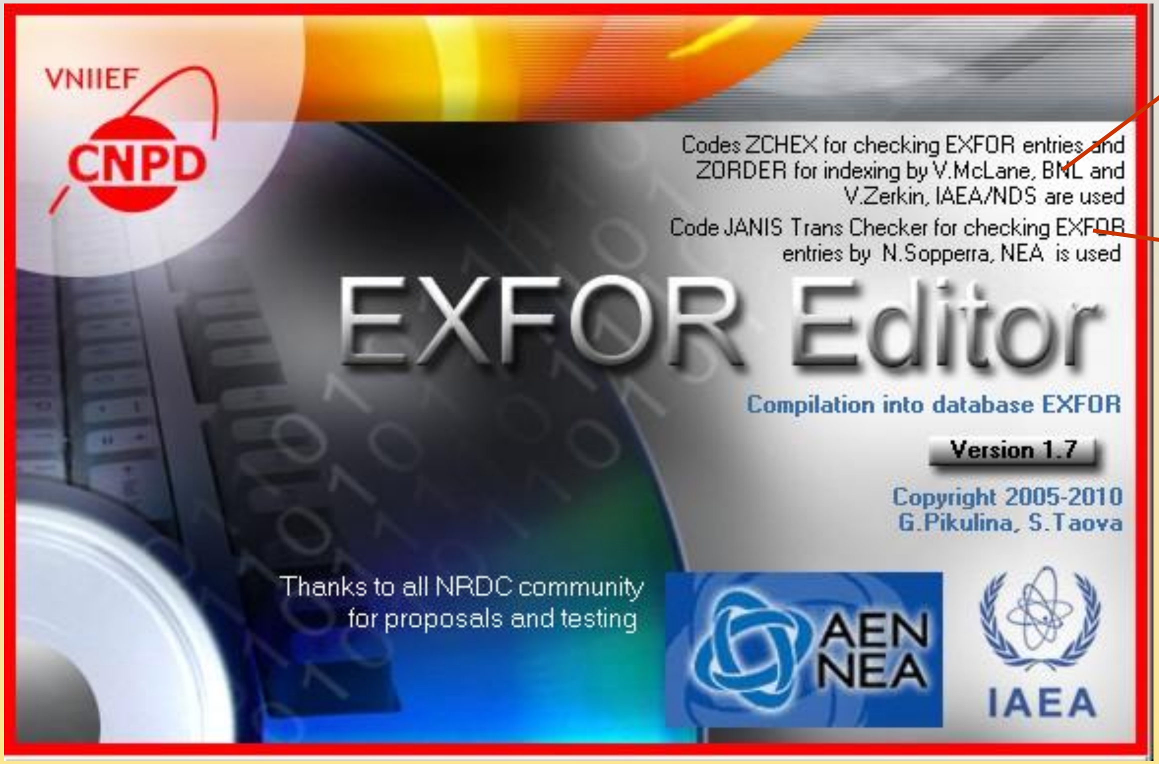
^{10}B – 7 reactons;

^{11}B – 3 reactons;

^{16}O – 15 reactons;

^{27}Al – 3 reactons;

^{28}Si – 7 reactons etc.



ZCHEX
ZORDER, (NDS, IAEA, Austria, USA)

JANIS Trans Checker, (NEA DATA BANK, France)

Main Tasks

- New generation codes development.
- Development of data bases comprising nuclear-physics constants, substance and materials properties in the field of nuclear science, technique and technology
- Reference data qualification in the field of nuclear-physics constants, substance and materials properties in the field of nuclear science, technique and technology
- Development and publishing of the guides and charts in the field of physical constants and substances and materials properties within the frames of national and international cooperation

Interdepartmental Data and Software Qualification Commission

- 1. Many members of the Interdepartmental Data and Software Qualification Commission are the experts in the design of nuclear reactors, as well as in the evaluation of nuclear-physical data used in the reactor designs.
- 2. In evaluation of nuclear data much attention is paid to the data verification and validation.
- 3. We are engaged not only in experimental data, but codes too.

Development of scientific and methodological documents to support functioning ROSATOM Standard Reference Data System

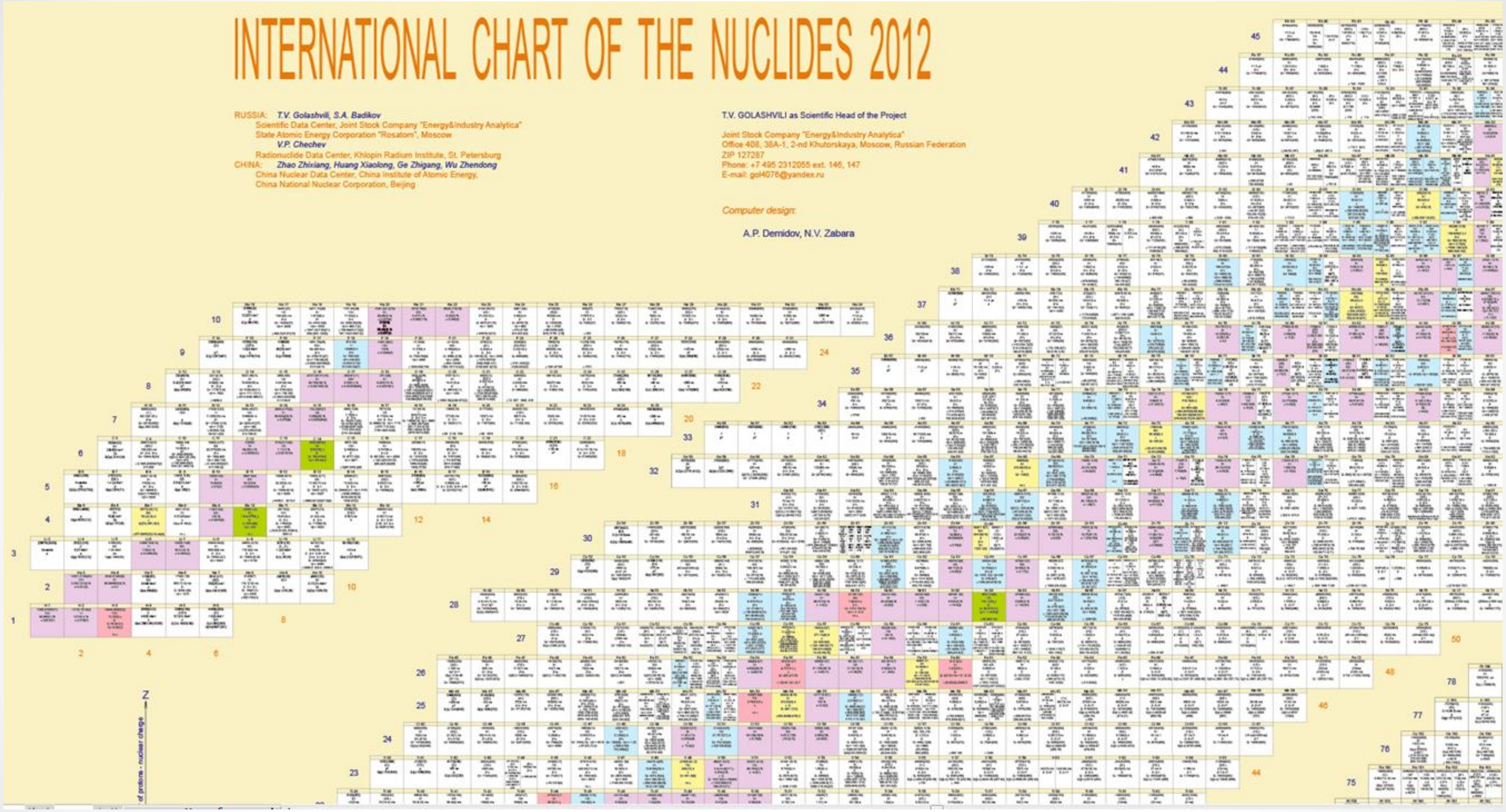
The work results:

- An electronic version of Nuclear and Radiation Safety Thesaurus for the CIS countries.
- Tables of thermal properties of gaseous media depending on temperature and pressure.

Nuclide Guides and Charts

ROSATOM Scientific Data Center efforts within Russian-Chinese cooperation framework resulted in designing wall-type chart of nuclides, which includes 9 nuclear characteristics for 3880 nuclides recommended by international and national organizations (evaluated data from ENSDF, IAEA and other organizations of Russia, Japan and China have been used). The Chart repeatedly published in Russian and English languages beginning from 1995. Below are the individual boxes from the chart and overall appearance.

Ce 139	**Th 233**	**U 239**	**Cm 246**
-86952 (7)	38733.2 (20)	50573.9 (19)	62618.4 (21)
$3/2^+$	$1/2^+$	$5/2^+$	0^+
137.64 (2) d	22.15 (8) min	23.46 (4) min	4723 (27) y
ε	β^-	β^-	α, SF
Q^+ 270 (3)	Q^- 1243.1 (14)	Q^- 1261.5 (16)	Q(α) 5476.7 (9)
	$\langle\beta^-\rangle$ 405 (7)	$\langle\beta^-\rangle$ 390 (25)	α 5387.5 5343.7
$\langle\gamma\rangle$ 132.52 (7)	$\langle\gamma\rangle$ 33.2	$\langle\gamma\rangle$ 50.3 (20)	$\langle\gamma\rangle$ 0.0138 (4)
γ 165.858	γ 29.37 86.48 459.22	γ 43.533 74.664	γ 44.55 102.8


INTERNATIONAL CHART OF THE NUCLIDES 2012
RUSSIA: T.V. Golashvili, S.A. Badikov
Scientific Data Center, Joint Stock Company "Energy&Industry Analytica"
State Atomic Energy Corporation "Rosatom", Moscow
V.P. Chechev
Radionuclide Data Center, Khlopin Radium Institute, St. Petersburg
CHINA: Zhao Zhixiang, Huang Xiaolong, Ge Zhigang, Wu Zhendong
China Nuclear Data Center, China Institute of Atomic Energy,
China National Nuclear Corporation, Beijing
T.V. GOLASHVILI as Scientific Head of the Project
Joint Stock Company "Energy&Industry Analytica"
Office 408, 38A-1, 2-nd Khutorskaya, Moscow, Russian Federation
ZIP 127287
Phone: +7 495 2312055 ext. 146, 147
E-mail: gol4076@yandex.ru
Computer design:
A.P. Demidov, N.V. Zabara
Z
of protons - nuclear charge

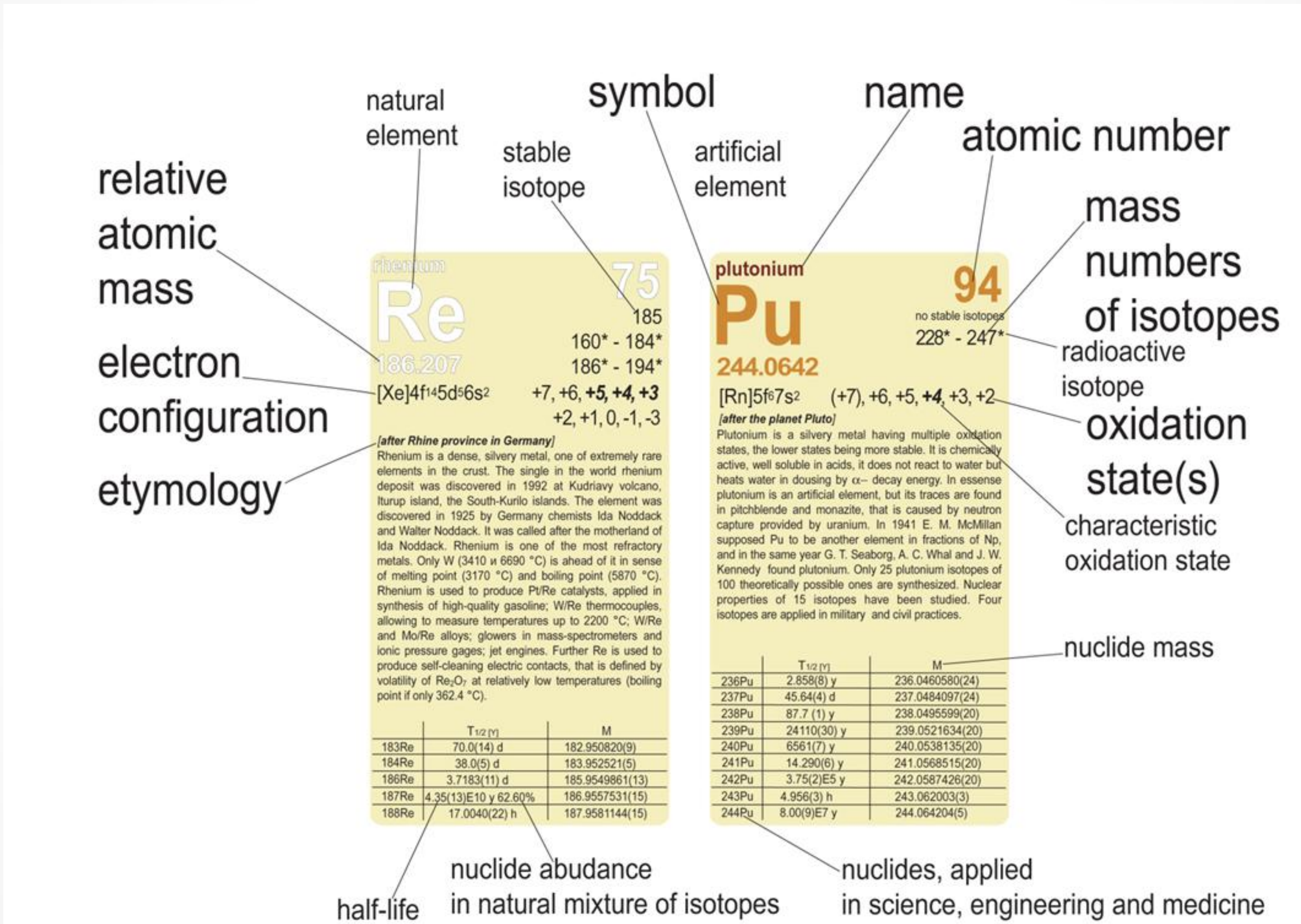
Nuclide guides in Russian, English and Chinese repeatedly published since 1995. Below are the individual boxes from the guide.

92-U-236	$\langle\alpha\rangle$ 4490(250) $\langle e\rangle$ 8.8 $\langle\gamma X\rangle$ 1.2(3)
92-U-237	$\langle\beta^-\rangle$ 68(6) $\langle e\rangle$ 110 $\langle X\rangle$ 61 $\langle\gamma\rangle$ 75.5(8)
92-U-238	$\langle\alpha\rangle$ 4187(30) $\langle e\rangle$ 8.8 $\langle\gamma X\rangle$ 1.2(1)
93-Np-234	$\langle\beta^+\rangle$ 0.17(4) $\langle e\rangle$ 35 $\langle X\rangle$ 70 $\langle\gamma\rangle$ 1030(30)
93-Np-237	$\langle\alpha\rangle$ 4842(1) $\langle e\rangle$ $\langle\gamma X\rangle$ 30

93-Np-238	$\langle\beta^-\rangle$ 210(10) $\langle e\rangle$ 35 $\langle X\rangle$ 6.3 $\langle\gamma\rangle$ 582(9)
93-Np-239	$\langle\beta^-\rangle$ 118(4) $\langle e\rangle$ 85 $\langle X\rangle$ 57 $\langle\gamma\rangle$ 118.2(7)
94-Pu-236	$\langle\alpha\rangle$ 5760(25) $\langle e\rangle$ 9.6 $\langle\gamma X\rangle$ 1.58(7)
94-Pu-237	$\langle e\rangle$ 9.1(4) $\langle\gamma X\rangle$ 52.5(10) $\langle\alpha\rangle$ 0.23
94-Pu-238	$\langle\alpha\rangle$ 5486(5) $\langle e\rangle$ 9 $\langle\gamma X\rangle$ 1.4

94-Pu-239	$\langle\alpha\rangle$ 5146(6) $\langle e\rangle$ 4.8
94-Pu-240	$\langle\alpha\rangle$ 5155(8) $\langle e\rangle$ 11 $\langle\gamma X\rangle$ 1.3
94-Pu-241	$\langle\alpha\rangle$ 0.114(2) $\langle\beta^-\rangle$ 5.8(1) $\langle\gamma X\rangle$ 0.0017
94-Pu-242	$\langle\alpha\rangle$ 4892(12) $\langle e\rangle$ 7 $\langle\gamma X\rangle$ 1.1
94-Pu-243	$\langle\beta^-\rangle$ 159(20) $\langle e\rangle$ 6.4 $\langle\gamma X\rangle$ 27(4)
94-Pu-244	$\langle\alpha\rangle$ 4576.1(5) $\langle e\rangle$ 4.3 $\langle\gamma X\rangle$ 0.78

ROSATOM Scientific Data Center prepared and published the Periodic Table of chemical elements, including physical characteristics and properties of the chemical elements (authors: Golashvili T and Demidov A.). The table includes such features as atomic number, mass number, relative atomic mass, oxidation state, electron configuration, nuclide abundance, isotope half-life for 112 elements. Below are our notation and boxes for Ca, Rb, Zr and Xe.



	T1/2 [Y]	M
183Re	70.0(14) d	182.950820(9)
184Re	38.0(5) d	183.952521(5)
186Re	3.7183(11) d	185.9549861(13)
187Re	4.35(13)E10 y 62.60%	186.9557531(15)
188Re	17.0040(22) h	187.9581144(15)

	T1/2 [Y]	M
236Pu	2.858(8) y	236.0460580(24)
237Pu	45.64(4) d	237.0484097(24)
238Pu	87.7 (1) y	238.0495599(20)
239Pu	24110(30) y	239.0521634(20)
240Pu	6561(7) y	240.0538135(20)
241Pu	14.290(6) y	241.0568515(20)
242Pu	3.75(2)E5 y	242.0587426(20)
243Pu	4.956(3) h	243.062003(3)
244Pu	8.00(9)E7 y	244.064204(5)

CALCIUM

Ca

20

40.078

40, 42 - 44, 46, 48
34* - 39*, 41*, 45*, 47*, 49* - 57*

[Ar]$4s^2$ **+2**

[Lat. calx, calcis - lime ("soft stone")]

Calcium is a medium hard, silvery, typical alkaline earth metal. English chemist H. Davy in 1808 isolated metallic calcium from hydrate of lime with electrolysis. Pure metallic Ca is used in the metallothermic process to produce rare-earth metals. ^{48}Ca is used to produce super-heavy elements in accelerators. Lead of accumulator battery plates is doped with calcium. Ca is used in calcium-base babbites; in chemical current sources. Monocrystals of calcium fluoride (fluorite) are used in optics (astronomical lenses, prisms), and as a laser material. Monocrystals of calcium tungstate (scheelite) are used in laser equipment. Calcium carbide is widely used to produce acetylene. Calcium oxide being both free and as part of ceramic mixtures is used to produce refractory materials. Calcium compounds are widely used as antihistaminic preparations. Calcium ions play a significant role in animal organizms (calcium channels). Calcium is an important element to form skeleton. Loss of calcium ions results in osteoporosis.

	$T_{1/2}$ [Y]	M
^{45}Ca	162.67(25) d	44.9561866(4)
^{47}Ca	4.536(3) d	46.9545460(24)

RUBIDIUM

Rb

37

85.4678

85, 87
71* - 84*, 86*
88* - 102*

[Kr]$5s^1$ **+1**

[Lat. – rubidius - due to red color in spectrum]

Rubidium is a soft, silvery, chemically active alkali metal, extremely unstable in air (it ignites when reacts with air in presence of trace water). It forms all kinds of salts. It was discovered by R.W. Bunsen and G.R. Kirchhoff (Heidelberg, Germany) in 1861. Metallic rubidium was produced by R.W. Bunsen in 1863. ^{86}Rb is used in γ-flaw detection, measuring equipment. Rb and its alloys are used in photoconverters, as coolant and working fluid of high-temperature turbosets; as catalyst to treat oil, to synthesize methanol and higher alcohols, in-situ coal gasification and to produce artificial liquid fuel; as lubricant in vacuum. Rubidium chloride is used to measure high temperatures (up to 400 °C). Rb plasma is used to drive laser emission. Rubidium chloride and rubidium hydroxide are used in fuel cells as electrolyte.

	$T_{1/2}$ [Y]	M
^{81}Rb	4.570(4) h	80.918996(6)
^{82}Rb	1.273(2) min	81.9182086(30)
^{83}Rb	86.2(1) d	82.915110(6)
^{84}Rb	33.1(1) d	83.914385(3)
^{86}Rb	18.642(18) d	85.91116742(21)
^{89}Rb	15.15(12) min	88.912278(6)

ZIRCONIUM

Zr 40

90 - 92, 94, 96
78* - 89*, 93*, 95*
97* - 110*

91.224

[Kr]$4d^2 5s^2$ **+4**, +3, +2, 0, -2

[Arabic - zarkun (cinnabar) or Persian - zargun (gold-like)]

Zirconium is a grayish-white, lustrous, stable to corrosion metal. Zirconium as dioxide was first isolated in 1789 by Germany chemist M.H. Klaproth as a result of zircon analysis. Zr is used as a structural material in nuclear and chemical reactors, as a smokeless agent in signal lights of pyrotechnics and primers; as superconducting alloy (Nb/Zr); as a refractory material for refractory facing in glass-melting and iron-and-steel furnaces; in structural ceramics, enamels and glazes; in prosthetics; zirconium carbide is used as a structural material in solid-core nuclear jet engines; zirconium beryllide is used in aerospace engineering (engines, effusers, reactors, radioisotope electric generators); zirconium hydride is used as neutron moderator in nuclear reactors. Fianites (cubic zirconia), produced by modifying zirconium dioxide, are used as optical materials, in medicine (surgical instrument), as synthesized jewellery (colour dispersion, index of refraction and irisation are higher than those of diamond), in producing man-made fibers.

	$T_{1/2}$ [Y]	M
^{95}Zr	64.032(6) d	94.9080426(26)

XENON

Xe 54

124, 126, 128 - 132, 134
136, 110* - 123*, 125*
127*, 135*, 137* - 147*

131.293

[Kr]$4d^{10}5s^2 5p^6$ +8, +6, +4, +2, 0

[Greek - χενοζ - stranger (discovered as an impurity)]

Xenon is a monoatomic, odorless, colourless gas. It was discovered by English scientists W. Ramsay and M.W. Travers in 1898. The first chemical xenon compound ($XePtF_6$) stable at room temperature was reported by Neil Bartlett in 1962 in Canada. Xenon is used in filament lamps, powerful gas-discharge and flashing light sources; as a preparation for general narcosis; as high-efficiency working fluid for electroreactive (ion and plasma) spacecraft engines; radioactive xenon isotopes are used as radiation sources in radiography and diagnostics in medicine, l eak d etection i n v acuum e quipment; x enon fluorides are used for matal passivation; liquid xenon is a working fluid for high-power lasers; xenon fluorides and oxides are used as oxidizing agents for rocket propellant, as w ell a s c omponents o f g as m ixtures f or b oth h igh power laser weapon of earth-based antiaircraft defense, and space-based lasers. Xenon fluorides are toxic.

	$T_{1/2}$ [Y]	M
^{131m}Xe	11.934(21) d	
^{133}Xe	5.243(1) d	132.9059107(26)
^{133m}Xe	2.19(1) d	
^{135m}Xe	9.14(2) h	

International Cooperation

1. Participation in implementation of CIS Member States Framework Cooperation Program in the field of peaceful utilization of nuclear energy for the period up to 2020: "ATOM - CIS Cooperation " adopted by resolution of Council of Heads of CIS Governments of May 19, 2011 The result: Development and preparation for publication of Nuclear and Radiation Safety Thesaurus for CIS countries.

2. Participation in Russian-Chinese nuclear data working group (15 - 23 October 2012, Beijing, China). Reasons: Resolution of China-Russia intergovernmental commission on preparation of Russia/China Prime Ministers annual meetings (Minutes of meeting of Nuclear Data Subcommittee No 14 of 30 August 2010 (Beijing, China), and No 15 of 15 September 2011 (Moscow, Russia) . Result: Development and publication of Nuclide Guide in three languages: Russian, Chinese and English (authors: T. Golashvili, etc.), Cooperation Memorandum between ROSATOM Scientific Data Center and Nuclear Data Center of China Institute of Atomic Energy.

3. Participation in Russia-China CODATA working group and CODATA 23 annual conference (25 - 26 October 2012, Beijing, China, 28 - 30 October 2012, Taipei, Taiwan) - Open data and information for a changing world.
Report "Russian Rosatom Reference Data System", by T. Golashvili, etc.

CODATA President and Executive Director Letter to Rosatom State Corporation Leadership

CODATA

CODATA Secretariat
5 rue Auguste Vacquerie, 75016 Paris, France
Telephone: +33 1 45250496 - Fax: +33 1 42881466
Email: codata@dial.oleane.com
World Wide Web: http://www.codata.org/

Committee on Data for Science and Technology *of the International Council for Science*

To:
S.V. Kirienko
Director General
'Rosatom" Corporation

October 31st, 2012

I.M. Kamenskikh
First Deputy Director General
"Rosatom" Corporation

V.A. Pershukov
Deputy Director General
"Rosatom" Corporation

Copy: O.O. Patarakin
Head of Division of International
Scientific Program
"Rosatom" Corporation

Dear Colleagues,

We were very glad that Dr. Golashvili T.V. was able to attend the 23rd International CODATA Conference in Taipei, Taiwan and contribute to its success. He presented a report on the Russian National Standard Reference Data System and Nuclide Guide, International Chart of Nuclides 2012. The Presidents of CODATA, Professors Rossini, Vodar, Dubois, Rumble, Iwata and Lal greatly appreciated, as I do myself, the valuable contribution provided by Dr. Golashvili in improving communication on the extremely important activities of CODATA/ICSU. He personally reported on this at many international meetings.
At the 23rd CODATA Conference he succeeded in presenting International Chart of Nuclides 2012 and project "Evaluated data exchange. Properties of substances and materials utilized and produced by nuclear industry", that has been discussed too. This project appears to have considerable promise and in my mind should be recommended to implementation. In addition to this we will look for the opportunity to publish the new edition of International Chart of Nuclides with participation of scientists from China, France, Germany, Japan, Russia and the USA.
The above mentioned activity is important for both the nuclear science and engineering and radiation ecology, medicine, agriculture etc… China-Russian cooperation in the field of developments of the charts nuclides, nuclide guides and reference nuclear data is a good example of international cooperation in the field of peaceful utilization of nuclear energy.

Yours sincerely

Prof. Huadong Guo
CODATA, President

Kathleen Cass
CODATA, Executive Director

TRANSPORT AND THERMOPHYSICAL PROPERTIES

- *Thermophysical Properties Research Center (TPRC) Data Series,* edited by Y. S. Touloukian, Director, Thermophysical Properties Research Center, Purdue University Research Park, 2595 Yeager Road, West Lafayette, Indiana 47906, U.S.A., and C. Y. Ho, Head, Data Tables Division, Thermophysical Properties Research Center.
- The titles and estimated number of pages of the 13 volumes are as follows:

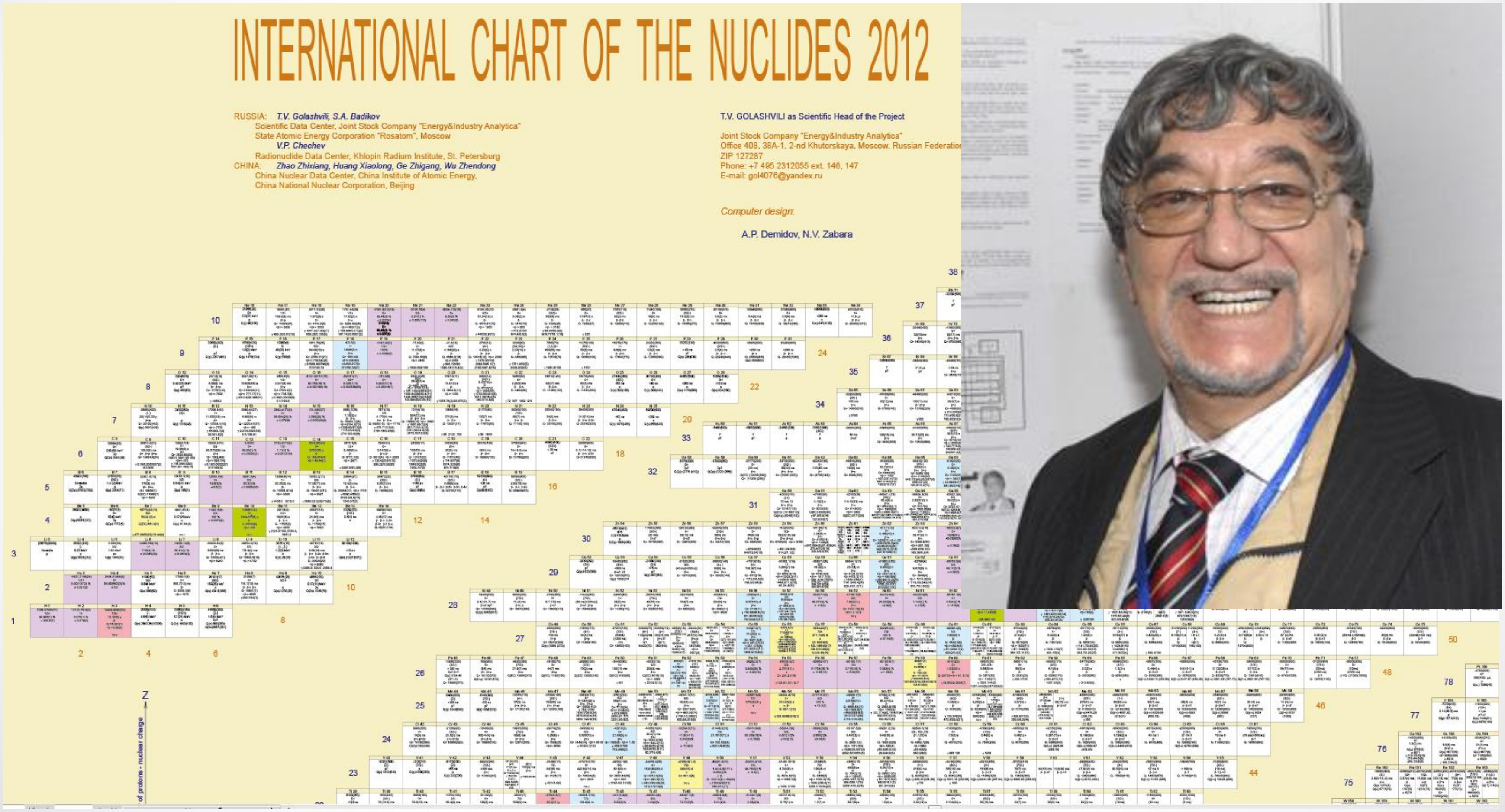
- Volume 1. Thermal Conductivity, Metallic Elements and Alloys (1600 pp),
- Volume 2. Thermal Conductivity, Nonmetallic Solids (1300 pp),
- Volume 3. Thermal Conductivity, Nonmetallic Liquids and Gases (700 pp).
- Volume 4. Specific Heat, Metallic Elements and Alloys (820 pp),
- Volume 5. Specific Heat, Nonmetallic Solids (1730 pp), Volume 6. Specific Heat, Nonmetallic Liquids and Gases (380 pp),
- Volume 7. Thermal Radiative Properties, Metallic Elements and Alloys (1650 pp),

- Vblume 8. Thermal Radiative Properties, Nonmetallic Solids (880 pp),
- Volume 9. Thermal Radiative Properties, Coatings (1690 pp),
- Volume 10. Thermal Diffusivity (500 pp),
- Volume 11. Viscosity (400 pp),
- Volume 12. Thermal Expansion, Metallic Elements and Alloys (1000 pp).
- Volume 13. Thermal Expansion, Nonmetallic Solids (1000 pp).

- For a complete description of the Thermophysical Properties Research Center and previous TPRC publications, refer to section 3.4.20., CODATA *International Compendium of Numerical Data Projects.*
- Tables of data on specific volume, enthalpy, entropy, specific heat, and velocity of sound in gaseous and liquid methane are given for temperatures and pressures up to 1000 K and 1000 bars respectively. For temperatures up to 500 K and pressures up to 500 bars, the experimental data on diffusion coefficients, thermal conductivity, viscosity, and Prandtl numbers are also correlated.

ROSATOM Standard Reference Data System value

is measured by experience of our experts




Without the unified safety standards
at the level of entire planet
the world nuclear power
will develop in a vulnerable mode

At international conferences


У стенда


В зале заседаний 2007


CODATA 2008


CODATA 2008

Awarding

Interdepartmental Reference Data Qualification Commission Meeting


List of major SRD DB


Db Sg Bh Hs Mt Ds Rg Uub Uut Uuq Uup Uuh Uus Uuo
Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er
Th Pa U Np Pu Am Cm Bk Cf
СПРАВОЧНИК НУКЛИДОВ

Intensifying ROSATOM Standard Reference Data System and Scientific Data Center activity on the principle items as follows:

•put into practice the mandatory use of qualified reference data in development of nuclear hazardous facilities and installations, and modes of operation thereof during entire life cycle up to decommissioning and disposal;

•implement compulsory qualification of the data included in the software used in development of nuclear facilities;

•introduce the requirement about obligatory use of the qualified techniques used during qualification of data and software;

- begin the activity on formation of ROSATOM State Corporation Standards, including the evaluated neutron data library, nucleus decay nuclear/physical characteristics library, Russian dosimetric file;
- begin the activity on training the specialists in the field of data acquisition, compilation, evaluation and standardization concerning nuclear-physical constants and substances and materials properties for nuclear science, technique and technology, as well as medicine, space, ecology and agriculture;
- utilize predominantly theoretical methods in developing new data by calculation, which requires infinitely less time and cost than an experiment does.