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Atomic Psychological Chemistry: New Approaches for General Chemistry

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Abstract

Based on the current state of philosophy of science, research that goes to the level of wisdom requires an approach that can prevent bias and error research. Chemistry which is the center of science requires an approach that is capable of multidisciplinary. In Chemistry, research developments are very rapid and the knowledge is increasingly specific and in-depth, such as new synthesis methods, new analytical methods, new concepts, etc. However, scientists have not been satisfied with his/her findings because of philosophy. To help the path of the philosophy to be wiser and more focused, I propose an approach is atomic psychological chemistry. I have explored this approach based on inspiration, observation, evaluation, reflection, and insight. This approach can provide a new paradigm and philosophy for conducting scientific research, especially chemistry. This study will describe the approach in the periodic table of elements. The discussion focused on the approach.

Keywords: Psychological Attribute, Chemical Element, Periodic Table of Element, Multidisciplinary

Introduction

Research in the world has been pioneered by 3 famous ancient Greek philosophers, namely Socrates, Plato, and Aristotle. With a growing philosophy, chemistry developed rapidly. Currently, chemical research is starting to rise at the level of wisdom [1]. This level is the level reached by the hopes of a philosopher. I observe the progress towards wisdom research that currently exists assisted by techniques such as machine learning, bibliometrics, artificial intelligence, computation, and big data. Research data that has been collected in big data will be able to lead to research that is fast, precise, high yielding, and safe.

The impact of the research observed by the author indicated that there is chaos or research within small data or data. The data is still a gap in research design, so that research becomes difficult and can lead to long-term research failures. [2-4]. Another result is the existence of try and error in research techniques caused by policy errors.

To minimize the failed research, it solves by a new approach, namely atomic psychological chemistry. The approach is the result of the inspiration experienced by the author as the relationship between philosophy and chemistry. The approach have understood that material will have properties similar to the properties of life (living things). The nature of life will show an inspiration and answer to chaos and gaps in research. So, these two approaches are expected to be the basis of philosophy in designing research designs that begin to put forward a multidisciplinary science. Chemistry will be more holistic perspective.

Simple Psychological Attribute Of Chemical Element On Periodic Table Of Element

Psychological approach in chemistry has never been carried out as long as the author's knowledge. Psychology means that science is able to understand a symptom, behavior, and nature of an object (in chemistry, elements). Moreover, the

psychology approach in this study knows as Simple Psychological Attribute of Chemical Element. This term was obtained from correlation of psychology approach and periodic table of element. Sure, it will be one of general chemistry.

As example, the author imitates hydrogen element, that hydrogen element in nature is very abundant and is always in a condition of covalent bonds. The psychological answer to this phenomenon is that hydrogen generously donates electrons to covalent bonds, so hydrogen has beneficent property. Further examples, helium in nature is abundant in space and began to be investigated as an element that is able to become another element through fusion reactions. The psychological answer to this phenomenon is that helium has a merciful property, which must like to interact continuously even though it is inert. The rest, the psychological approach will depend on the philosophical way of scientists. The approach is shown at Figure 1 which contains the periodic table of elements equipped with psychological attributes.

Alkali Metals

Alkaline Earth Metals

Transition Metals

Other Metals

Nonmetals

Noble Gases

Lanthanoids

Actinoids

key

element name

atomic number

symbol

atomic weight

psychological attribute

hydrogen

1

H

1.00794

Beneficent

beryllium

4

Be

9.012182

Holy

lithium

3

Li

6.941

King

sodium

11

Na

22.98977

create

magnesium

12

Mg

24.3050

make

boron

5

B

10.811

Peace and Blessing

carbon

6

C

12.0107

Guarantee

nitrogen

7

N

14.00674

Guardian, Preserver

oxygen

8

O

15.9994

Almighty, Self-Sufficient

fluorine

9

F

18.9984

Powerful, Irresistible

helium

2

He

4.002602

Merciful

neon

10

Ne

20.1797

Tremendous

aluminum

13

Al

26.981538

Fashion of Forms

silicon

14

Si

28.0855

Ever Forgiving

phosphorus

15

P

30.97376

All Compelling Subdue

sulphur

16

S

32.065

Bestow

chlorine

17

Cl

35.453

Ever Providing

argon

18

Ar

39.984

Open, Victory Give

potassium

19

K

39.0983

All Knowing, Omniscent

calcium

20

Ca

40.078

Restrain, Straighten

scandium

21

Sc

44.95591

Expander, Munificent

titanium

22

Ti

47.867

Abase

vanadium

23

V

50.9415

Exalt

chromium

24

Cr

51.9961

Give of Honor

manganese

25

Mn

54.93805

Give of Dishonor

iron

26

Fe

55.845

All Hearing

cobalt

27

Co

58.9332

All Seeing

nickel

28

Ni

58.6934

Judge, Arbitrate

copper

29

Cu

63.546

Utterly Just

zinc

30

Zn

65.409

Subtly Kind

gallium

31

Ga

69.723

All Aware

germanium

32

Ge

72.64

Forbearing, Indulgent

arsenic

33

As

74.9216

Magnificent, Infinite

selenium

34

Se

78.96

Forgiving

bromine

35

Br

79.904

Grateful

krypton

36

Kr

83.798

Sublimely Exalted

rubidium

37

Rb

85.4678

Great

strontium

38

Sr

87.62

Preserve

yttrium

39

Y

88.90585

Nourish

zirconium

40

Zr

91.225

Reckone

niobium

41

Nb

92.90638

Majestic

molybdenum

42

Mo

95.94

Bountiful, Generous

technetium

43

Tc

[98]

Watchful

ruthenium

44

Ru

101.07

Responsive, Answer

rhodium

45

Rh

102.9055

Vast, All Encompassing

palladium

46

Pd

106.42

Wise

silver

47

Ag

107.8682

Loving, Kind One

cadmium

48

Cd

112.411

All Glorious

indium

49

In

114.818

Raise of the Dead

tin

50

Sn

118.710

Witness

antimony

51

Sb

121.760

Truth, Real

tellurium

52

Te

127.60

Trustee, Dependable

iodine

53

I

126.9045

Strong

xenon

54

Xe

131.293

Firm, Steadfast

caesium

55

Cs

132.90545

Protecting Friend, Patron, and Helpe

barium

56

Ba

137.327

All Praiseworthy

lutetium

71

Lu

174.967

Expedite, brings forward

hafnium

72

Hf

178.49

Delay, puts far away

tantalum

73

Ta

180.9479

First

tungsten

74

W

183.84

Last

rhenium

75

Re

186.207

Manifest; All Victorious

osmium

76

Os

190.23

Hidden; All Encompassing

iridium

77

Ir

192.217

Patron

platinum

78

Pt

195.078

Self Exalted

gold

79

Au

196.96655

Most Kind and Righteous

mercury

80

Hg

200.59

Ever Returning, Ever Relenting

thallium

81

Tl

204.3833

Avenge

lead

82

Pb

207.2

Pardon, Efface of Sins

bismuth

83

Bi

208.980

Compassionate, All Pitying

polonium

84

Po

[209]

Own of All Sovereignty

astatine

85

At

[210]

Lord of Majesty and Generosity

radon

86

Rn

[222]

Equitable, Requite

francium

87

Fr

[223]

Gather, Unify

radium

88

Ra

[226]

All Rich, Independent

lawrencium

103

Lr

[262]

rutherfordium

104

Rf

[261]

dubnium

105

Db

[262]

seaborgium

106

Sg

[266]

bohrium

107

Bh

[264]

hassium

108

Hs

[269]

meitnerium

109

Mt

[268]

darmstadtium

110

Ds

[271]

roentgenium

111

Rg

[272]

copernicium

112

Cn

[285]

nihonium

113

Nh

[286]

flerovium

114

Fl

[289]

moscovium

115

Mc

[290]

livermorium

116

Lv

[293]

tennessine

117

Ts

[294]

oganesson

118

Og

[294]

lanthanum

57

La

138.9055

Account, Number of All

cerium

58

Ce

140.116

Produce, Originate, and Initiate of all

praseodymium

59

Pr

140.90765

Reinstate the Brings Back All

neodymium

60

Nd

144.24

Give of Life

promethium

61

Pm

[145]

Bring of Death, Destroy

samarium

62

Sm

150.36

Ever Living

europium

63

Eu

151.964

Self Subsisting Sustainer of All

gadolinium

64

Gd

157.25

Perceive, Find, Unfailing

terbium

65

Tb

158.9253

Illustrious, Magnificent

dysprosium

66

Dy

162.50

One, Unique, Manifestation of Unity

holmium

67

Ho

164.930

One, All Inclusive, Indivisible

erbium

68

Er

167.259

Self-Sufficient, Impregnable, Eternally Besought of All, Everlasting

thulium

69

Tm

168.934

All Able

ytterbium

70

Yb

173.04

All Determine, Dominant

actinium

89

Ac

[227]

Enrich, Emancipate

thorium

90

Th

232.038

Withhold, Shield, Defend

protactinium

91

Pa

231.0359

Distress, Harm

uranium

92

U

238.0289

Propitious, Benefact

neptunium

93

Np

[237]

Light

plutonium

94

Pu

[244]

Guide

americium

95

Am

[243]

Incomparable, Originate

curium

96

Cm

[247]

Ever Enduring and Immutate

berkelium

97

Bk

[247]

Heir, Inherit of All

californium

98

Cf

[251]

Guide, Infallible Teach, and Know

einsteinium

99

Es

[252]

Patient

fermium

100

Fm

[257]

mendelevium

101

Md

[258]

nobelium

102

No

[259]

Note: Elements with atomic weights in square brackets have no stable isotopes

Sources: http://www.science-teachers.com/printable_periodic_tables.htm

Figure 1: Periodic Table of Elements with a New Approach

An understanding of The approach can predict the success of a synthesis with certain properties. A simple example is NaCl salt. The salt can definitely be formed because the psychological attributes of Na and Cl do not conflict. The nature of the NaCl formed is a combination of 2 psychological attributes (create and ever providing properties).

One easy way to understand this unusual phenomenon in crystallographic research is the compound [(Cy3P)IAg(μ-py)AgI(PCy3)] as the 'crevice' bridging co-ordination mode of pyridine [5]. The complex compound proves the existence of Ag atoms that bind 3 bonds, namely coordination bonds between Ag-I, Ag-N, Ag-P. As an assessment of the nature of psychology, this phenomenon occurs in mutual support. where Ag atom is understood as the "Loving, Kind One" property, I atom is understood as the "Strong" property, N atom is understood as the "Guardian, Preserver" property, and P atom is understood as the "All Compelling Subdue" property. The N atom directly balances the distortion created

by the P and I atoms. Synthesis of complex compounds will be easier assisted by understanding of the approach according to the level of the researcher's own philosophy.

The approach was proposed in chemistry because chemistry consist of matter and its change. For more explanation, the chemical element will be described more in supplementary document (S1). As philosophy, we realize a relationship between matter and nature properties. Nature properties have a unique characteristic. All people will believe that life always relate with trust, and open to divinity as science becomes a field of knowledge.

The effect of the approach was the infinity knowledge as proposal. The approach can be obtained of characteristic of element, periodic properties, etc. The approach was deal with real magnitude of element. New example of the approach effect was: periodic cycle of element and periodic shadow of element. Two examples were correlated with periodic table of elements. So, the correlations were formed based on depth understanding of nature properties.

Periodic Cycle of Element

In particular, periodic table of element has unique arrangement. Also, the new unique arrangement was periodic cycle of element. That is to determine the possible properties of the element. Addition, the cycle can also predict the formula of new element in the higher weight. The periodic can be seen in Figure 2. Based on the Figure, the cycle of element can be used as like as puzzle. It stimulates a future challenge for synthesis of a new atom/element or it stimulates a prediction for nuclear reaction. For example: fission reaction for Uranium atom (92) always releases atoms inside the shell of cycle, i.e.: Rubidium (37), Cesium (55), etc.

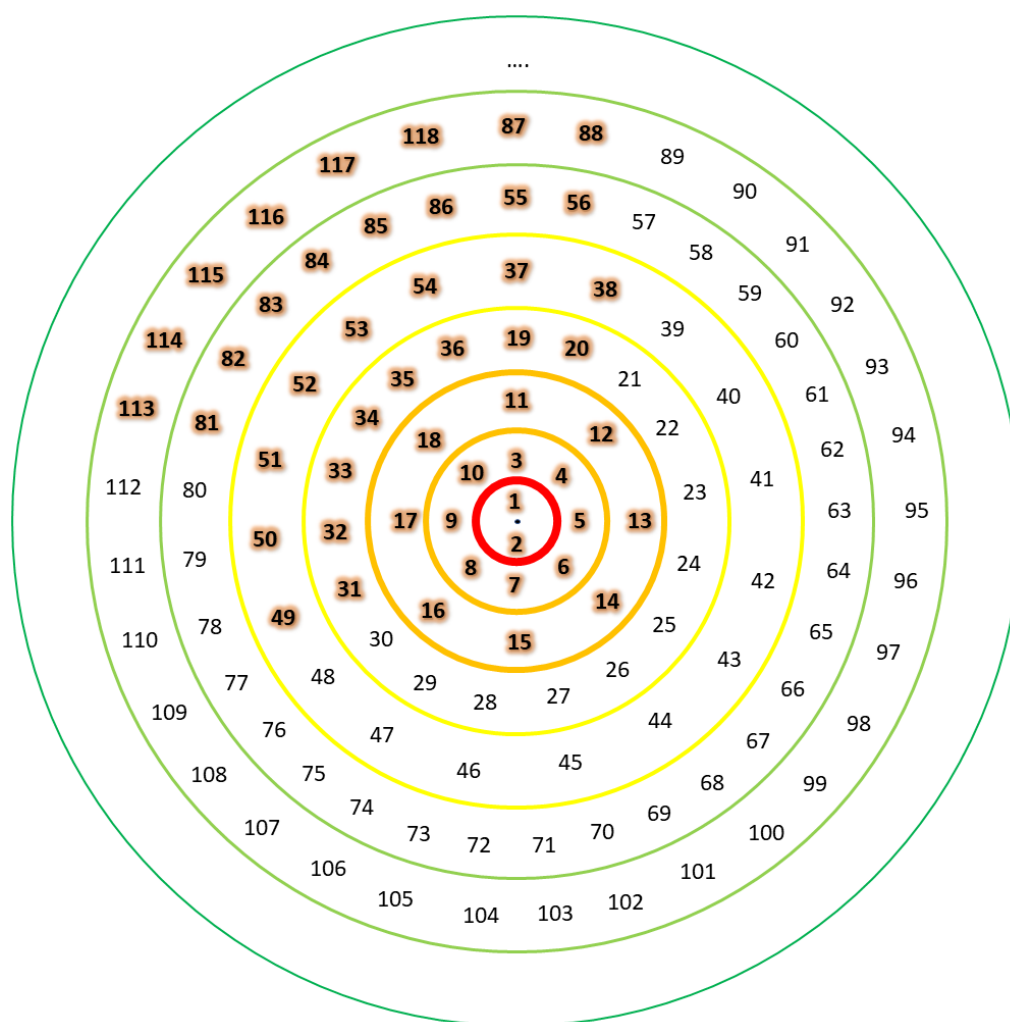


Figure 2: Periodic Cycle of Elements with Number of Atom

Periodic Shadow of Element

In particular, periodic table of element has predicted that the shadow properties as a opposite of element properties. This is a new approach. It was the other possible properties of element. Therefore, the periodic shadow of element can help us for understanding of element properties at all. The periodic can be seen in Figure 3. Based on the Figure, the negative sign is determined as subtraction of proton and electron. The shadow properties are unidentified properties in this century, but the future challenge will be potential as important properties. The properties can be perfect philosophy, which was opposite of the common periodic table of elements as known. For example: hydrogen has 1 proton and 1 electron, so the shadow property correlates with 0 proton and 0 electron.

As the beginning of this new idea, atomic psychological chemistry approach provides an in-depth philosophical path to the interactions of chemical particles, chemical properties, and reflection of life. So, this study can pave the way for wise discussion in planning a long roadmap of a research. Then, the role of philosophy can be more closely involved with research activities, and research can avoid a dead end. The approach as new holistic perspective in science, so the discussion will be unfinished because of the complexity of chemical element. Important one, the approach only shows the truth by right thinking of philosophy. On the other hand, this study try to reach the psychology in chemistry at atomic level, so the author named as atomic psychological chemistry.

On this occasion, the author would like to thank to Universitas Negeri Malang (UM) Indonesia for environmental supporting. Thankfully, the study dedicated to Prof. Effendy, Ph.D who has inspired the author about religious and philosophy, and to Prof. Dr. Subandi, M.Si who has also inspired the author to find new idea. Finally, the study also reflected a philosophy of the author, so thanks to Prof. Hadi Nur, Ph.D. who strongly encourage the understanding of the world wisdom and integrated religion.

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Rev Pharm Pharm Sci, 2026

15	P	Phosphorus	30.974	317.30	550	solid	The Subduer, The Ever-Dominating
16	S	Sulfur	32.06	388.36	717.87	solid	The Giver of Gifts
17	Cl	Chlorine	35.45	171.6	239.11	gas	The Provider
18	Ar	Argon	39.95	83.80	87.30	gas	The Opener, The Judge
19	K	Potassium	39.098	336.53	1032	solid	The All-Knowing, The Omniscient
20	Ca	Calcium	40.078	1115	1757	solid	The Withholder
21	Sc	Scandium	44.956	1814	3109	solid	The Extender
22	Ti	Titanium	47.867	1941	3560	solid	The Reducer, The Abaser
23	V	Vanadium	50.942	2183	3680	solid	The Exalter, The Elevator
24	Cr	Chromium	51.996	2180	2944	solid	The Honourer, The Bestower
25	Mn	Manganese	54.938	1519	2334	solid	The Dishonourer, The Humiliator
26	Fe	Iron	55.845	1811	3134	solid	The All-Hearing
27	Co	Cobalt	58.933	1768	3200	solid	The All-Seeing
28	Ni	Nickel	58.693	1728	3186	solid	The Judge, The Giver of Justice
29	Cu	Copper	63.546	1357.77	2835	solid	The Utterly Just
30	Zn	Zinc	65.38	692.88	1180	solid	The Subtle One, The Most Gentle
31	Ga	Gallium	69.723	302.9146	2673	solid	The Acquainted, The All-Aware
32	Ge	Germanium	72.630	1211.40	3106	solid	The Most Forbearing
33	As	Arsenic	74.922	1090 ^{lasi}	887	solid	The Magnificent, The Supreme
34	Se	Selenium	78.971	453	958	solid	The Forgiving, The Exceedingly Forgiving
35	Br	Bromine	79.904	265.8	332.0	liquid	The Most Appreciative
36	Kr	Krypton	83.798	115.79	119.93	gas	The Most High, The Exalted
37	Rb	Rubidium	85.468	312.46	961	solid	The Greatest, The Most Grand
38	Sr	Strontium	87.62	1050	1655	solid	The Preserver, The All-Heedful and All-Protecting
39	Y	Yttrium	88.906	1799	3609	solid	The Sustainer, The Maintainer
40	Zr	Zirconium	91.224	2128	4682	solid	The Reckoner
41	Nb	Niobium	92.906	2750	5017	solid	The Majestic
42	Mo	Molybdenum	95.95	2896	4912	solid	The Most Generous, The Most Esteemed
43	Tc	Technetium	[97]	2430	4538	solid	The Watchful, The All-Watchful
44	Ru	Ruthenium	101.07	2607	4423	solid	The Responsive, The Answerer
45	Rh	Rhodium	102.91	2237	3968	solid	The All-Encompassing, the Boundless
46	Pd	Palladium	106.42	1828.05	3236	solid	The All-Wise
47	Ag	Silver	107.87	1234.93	2435	solid	The Most Loving
48	Cd	Cadmium	112.41	594.22	1040	solid	The Glorious, The Most Honorable
49	In	Indium	114.82	429.75	2345	solid	The Infuser of New Life
50	Sn	Tin	118.71	505.08	2875	solid	The All Observing Witnessing
51	Sb	Antimony	121.76	903.78	1860	solid	The Absolute Truth
52	Te	Tellurium	127.60	722.66	1261	solid	The Trustee, The Disposer of Affairs
53	I	Iodine	126.90	386.85	457.4	solid	The All-Strong
54	Xe	Xenon	131.29	161.4	165.03	gas	The Firm, The Steadfast
55	Cs	Caesium	132.91	301.59	944	solid	The Protecting Associate
56	Ba	Barium	137.33	1000	2170	solid	The Praiseworthy
57	La	Lanthanum	138.91	1193	3737	solid	The All-Enumerating, The Counter
58	Ce	Cerium	140.12	1068	3716	solid	The Originator, The Initiator
59	Pr	Praseodymium	140.91	1208	3793	solid	The Restorer, The Reinstater
60	Nd	Neodymium	144.24	1297	3347	solid	The Giver of Life
61	Pm	Promethium	[145]	1315	3273	solid	The Creator of Death
62	Sm	Samarium	150.36	1345	2067	solid	The Ever-Living
63	Eu	Europium	151.96	1099	1802	solid	The Sustainer, The Self-Subsisting
64	Gd	Gadolinium	157.25	1585	3546	solid	The Perceiver

65	Tb	Terbium	158.93	1629	3503	solid	The Illustrious, The Magnificent
66	Dy	Dysprosium	162.50	1680	2840	solid	The One, The Indivisible
67	Ho	Holmium	164.93	1734	2993	solid	The Unique, The Only One
68	Er	Erbium	167.26	1802	3141	solid	The Eternal, Satisfier of Needs
69	Tm	Thulium	168.93	1818	2223	solid	The Omnipotent
70	Yb	Ytterbium	173.05	1097	1469	solid	The Powerful
71	Lu	Lutetium	174.97	1925	3675	solid	The Expediter, The Promoter
72	Hf	Hafnium	178.49	2506	4876	solid	The Delayer
73	Ta	Tantalum	180.95	3290	5731	solid	The First
74	W	Tungsten	183.84	3695	6203	solid	The Last, The Utmost
75	Re	Rhenium	186.21	3459	5869	solid	The Manifest, The All-Surpassing
76	Os	Osmium	190.23	3306	5285	solid	The Hidden One, Knower of the Hidden
77	Ir	Iridium	192.22	2719	4701	solid	The Sole Governor
78	Pt	Platinum	195.08	2041.4	4098	solid	The Self Exalted
79	Au	Gold	196.97	1337.33	3129	solid	The Source of All Goodness
80	Hg	Mercury	200.59	234.43	629.88	liquid	The Ever-Pardoning
81	Tl	Thallium	204.38	577	1746	solid	The Avenger
82	Pb	Lead	207.2	600.61	2022	solid	The Pardoner
83	Bi	Bismuth	208.98	544.7	1837	solid	The Most Kind
84	Po	Polonium	[209] ^[a]	527	1235	solid	Master of the Dominion, Owner of the Kingdom
85	At	Astatine	[210]	575	610	unkno wn phase	Possessor of Glory and Honour
86	Rn	Radon	[222]	202	211.3	gas	The Just One
87	Fr	Francium	[223]	281	890	unkno wn phase	The Gatherer, the Uniter
88	Ra	Radium	[226]	973	2010	solid	The Self-Sufficient, The Wealthy
89	Ac	Actinium	[227]	1323	3471	solid	The Enricher
90	Th	Thorium	232.04	2115	5061	solid	The Withholder
91	Pa	Protactinium	231.04	1841	4300	solid	The Distresser
92	U	Uranium	238.03	1405.3	4404	solid	The Propitious, The Benefactor
93	Np	Neptunium	[237]	917	4273	solid	The Light
94	Pu	Plutonium	[244]	912.5	3501	solid	The Guide
95	Am	Americium	[243]	1449	2880	solid	The Incomparable Originator
96	Cm	Curium	[247]	1613	3383	solid	The Ever-Lasting
97	Bk	Berkelium	[247]	1259	2900	solid	The Inheritor
98	Cf	Californium	[251]	1173	(1743) ^[b]	solid	The Guide to the Right Path
99	Es	Einsteinium	[252]	1133	(1269)	solid	The Patient
100	Fm	Fermium	[257]	(1125) ^[6] (1800) ^[7]	–	unkno wn phase	
101	Md	Mendelevium	[258]	(1100)	–	unkno wn phase	
102	No	Nobelium	[259]	(1100)	–	unkno wn phase	
103	Lr	Lawrencium	[266]	(1900)	–	unkno wn phase	
104	Rf	Rutherfordium	[267]	(2400)	(5800)	unkno wn phase	

105	Db	Dubnium	[268]	–	–	unkno wn phase	
106	Sg	Seaborgium	[267]	–	–	unkno wn phase	
107	Bh	Bohrium	[270]	–	–	unkno wn phase	
108	Hs	Hassium	[271]	–	–	unkno wn phase	
109	Mt	Meitnerium	[278]	–	–	unkno wn phase	
110	Ds	Darmstadtium	[281]	–	–	unkno wn phase	
111	Rg	Roentgenium	[282]	–	–	unkno wn phase	
112	Cn	Copernicium	[285]	(283±11)	(340±10) ^[bi]	unkno wn phase	
113	Nh	Nihonium	[286]	(700)	(1400)	unkno wn phase	
114	Fl	Flerovium	[289]	(284±50) ^[bi]	–	unkno wn phase	
115	Mc	Moscovium	[290]	(700)	(1400)	unkno wn phase	
116	Lv	Livermorium	[293]	(700)	(1100)	unkno wn phase	
117	Ts	Tennessine	[294]	(700)	(883)	unkno wn phase	
118	Og	Oganesson	[294]	(325±15)	(450±10)	unkno wn phase	

Note: Elements with atomic weights in square brackets have no stable isotopes
Sources: http://www.science-teachers.com/printable_periodic_tables.htm

Table 1: List of Chemical Elements with The Proposed Approach

Source: https://en.wikipedia.org/wiki/List_of_chemical_elements

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