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(54) **THREE-DIMENSIONAL PERIODIC TABLE**

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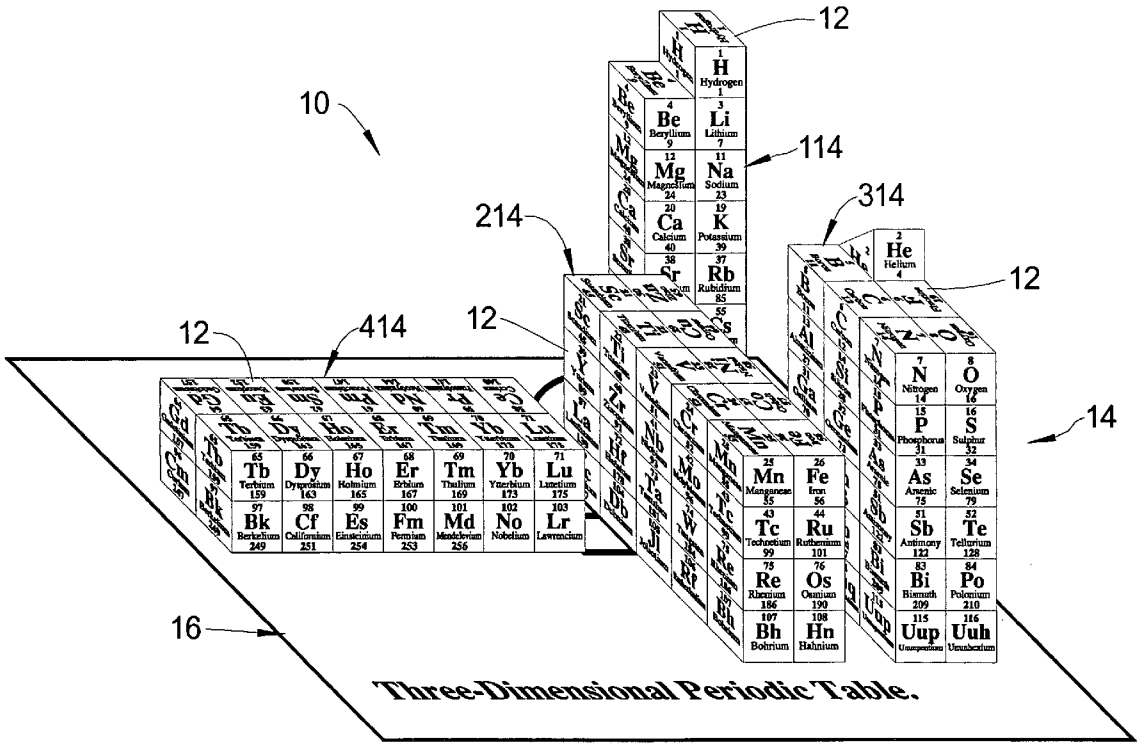
(52) **U.S. Cl.** **434/298**; 434/276

(57) **ABSTRACT**

The invention includes a three dimensional periodic table of the chemical elements and a method of learning about the periodic nature of the elements. Included are several cardboard or paper sheets, each having a plurality of blocks that display information about particular elements. The blocks are arranged in groupings of elements with similar properties, such as the transition Earth metals. Students follow a set of instructions provided with the sheets to cut out the groups, fold along particular lines, and affix tabs together to assemble several three dimensional forms. The students then place the forms on a planar map that indicates where to place each form and indicates how to follow the periods of elements between the forms.



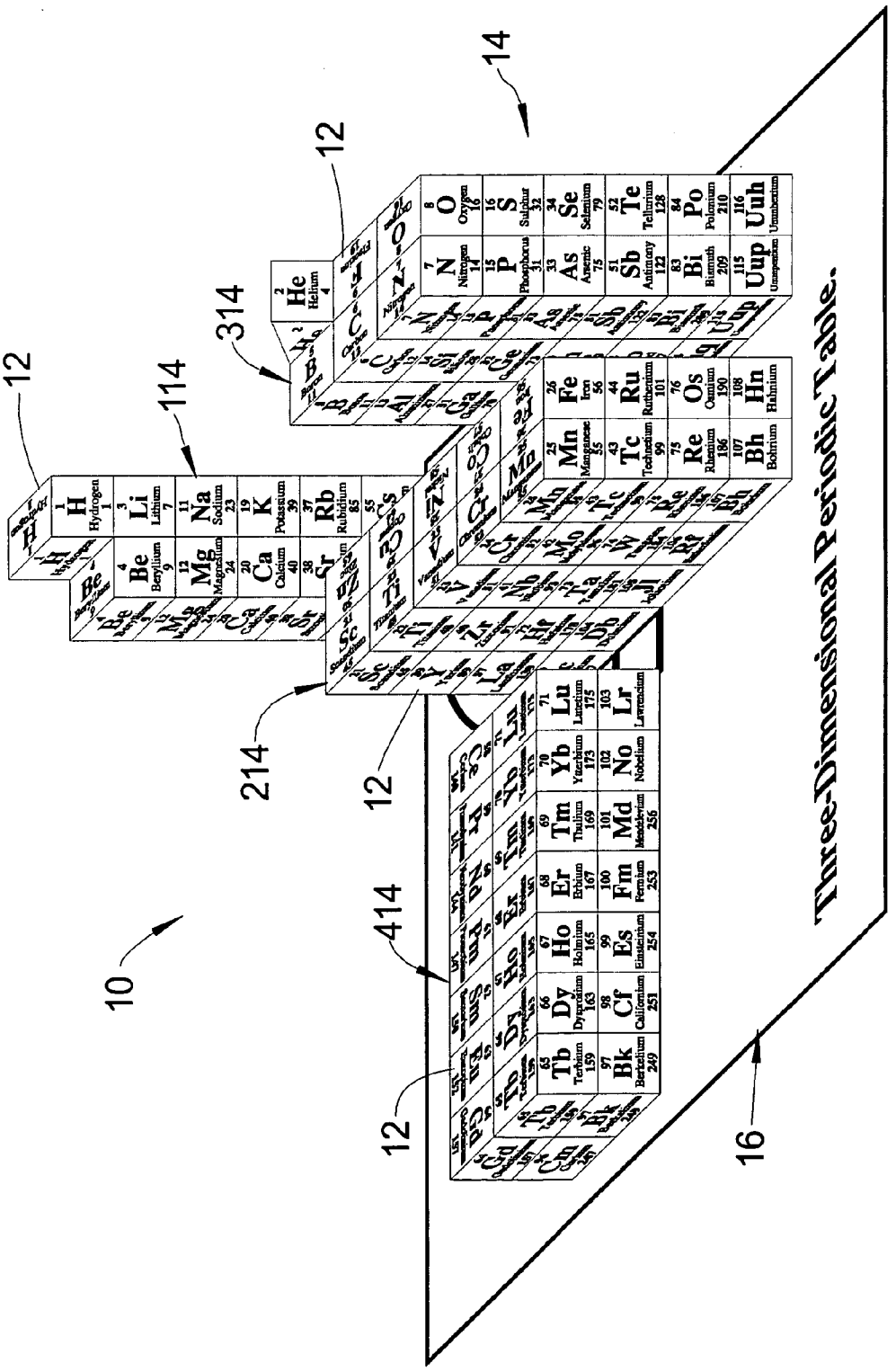
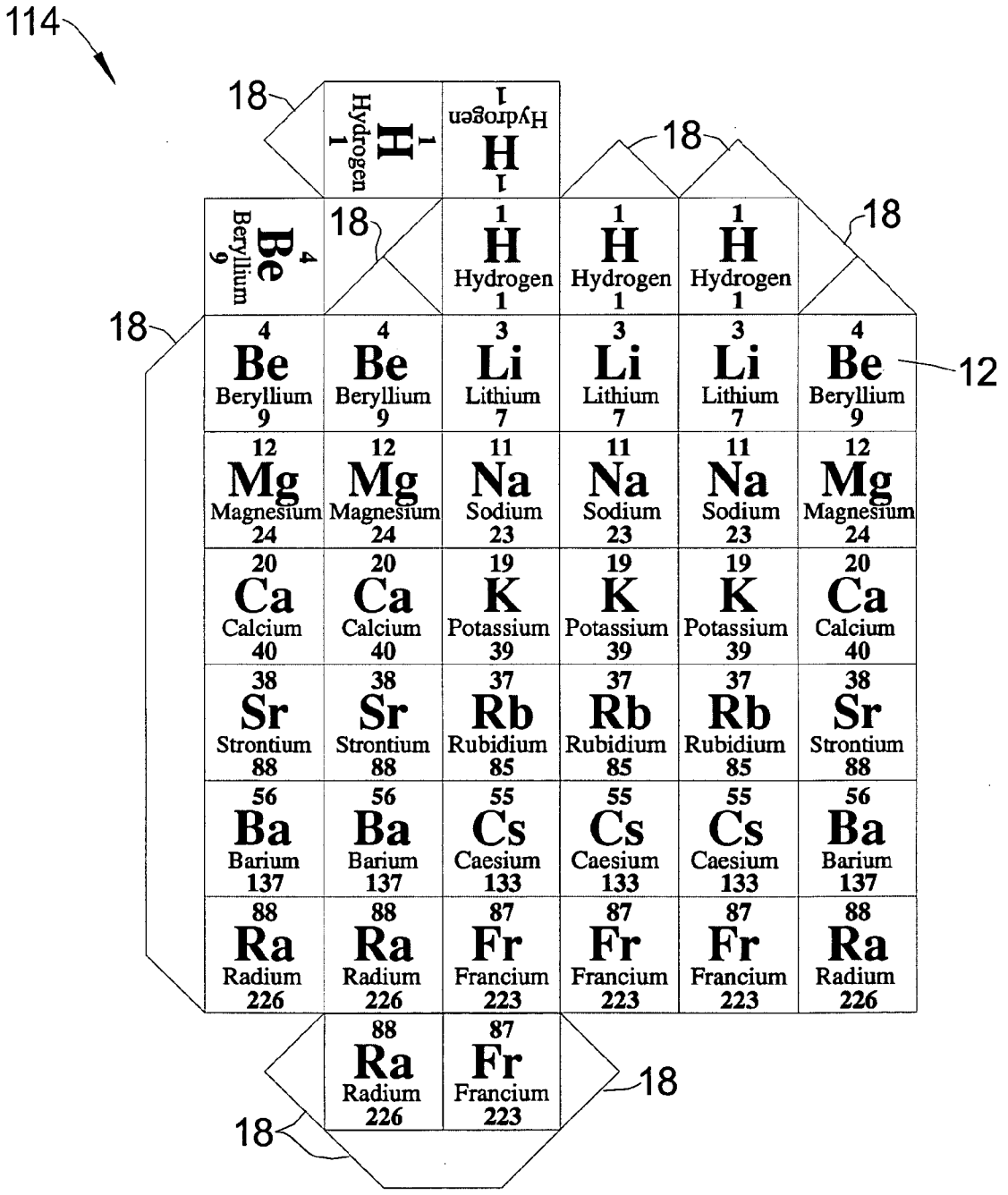


Fig. 1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18
18
18
18
18
18
12
Hydrogen 1 H 1
Hydrogen 1 H 1
Beryllium 9 Be 4
1 H Hydrogen 1
1 H Hydrogen 1
1 H Hydrogen 1
4 Be Beryllium 9
4 Be Beryllium 9
3 Li Lithium 7
3 Li Lithium 7
3 Li Lithium 7
4 Be Beryllium 9
12 Mg Magnesium 24
12 Mg Magnesium 24
11 Na Sodium 23
11 Na Sodium 23
11 Na Sodium 23
12 Mg Magnesium 24
20 Ca Calcium 40
20 Ca Calcium 40
19 K Potassium 39
19 K Potassium 39
19 K Potassium 39
20 Ca Calcium 40
38 Sr Strontium 88
38 Sr Strontium 88
37 Rb Rubidium 85
37 Rb Rubidium 85
37 Rb Rubidium 85
38 Sr Strontium 88
56 Ba Barium 137
56 Ba Barium 137
55 Cs Caesium 133
55 Cs Caesium 133
55 Cs Caesium 133
56 Ba Barium 137
88 Ra Radium 226
88 Ra Radium 226
87 Fr Francium 223
87 Fr Francium 223
87 Fr Francium 223
88 Ra Radium 226
88 Ra Radium 226
87 Fr Francium 223

Fig. 2

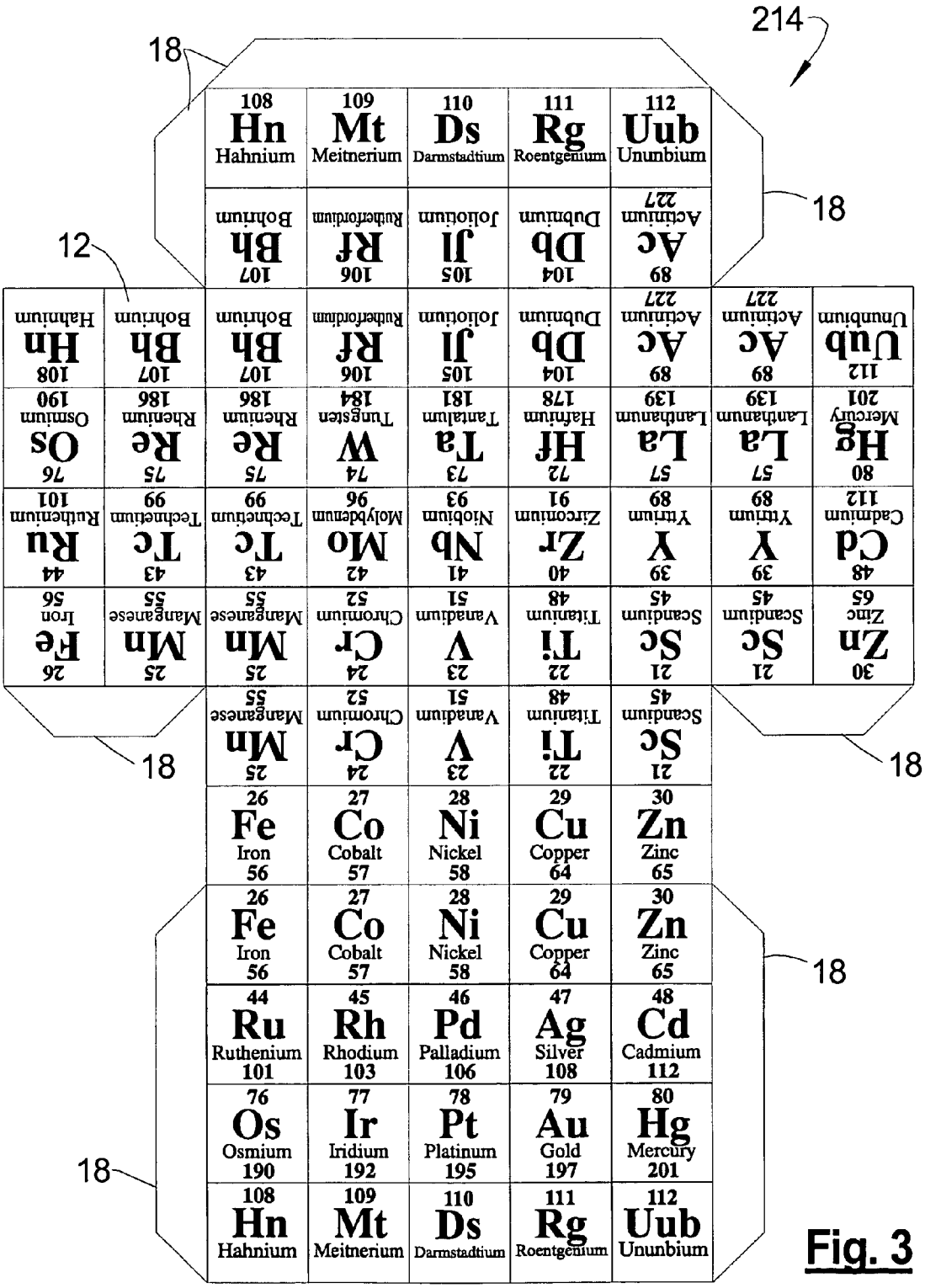

214
18
12
18
18
18
18
108 Hn Hahnium
109 Mt Meitnerium
110 Ds Darmstadtium
111 Rg Roentgenium
112 Uub Ununbium
107 Bh Bohrium
106 Rf Rutherfordium
105 Jl Jolioitum
104 Db Dubnium
89 Ac Actinium 227
26 Fe Iron 56
27 Co Cobalt 57
28 Ni Nickel 58
29 Cu Copper 64
30 Zn Zinc 65
44 Ru Ruthenium 101
45 Rh Rhodium 103
46 Pd Palladium 106
47 Ag Silver 108
48 Cd Cadmium 112
76 Os Osmium 190
77 Ir Iridium 192
78 Pt Platinum 195
79 Au Gold 197
80 Hg Mercury 201

Fig. 3

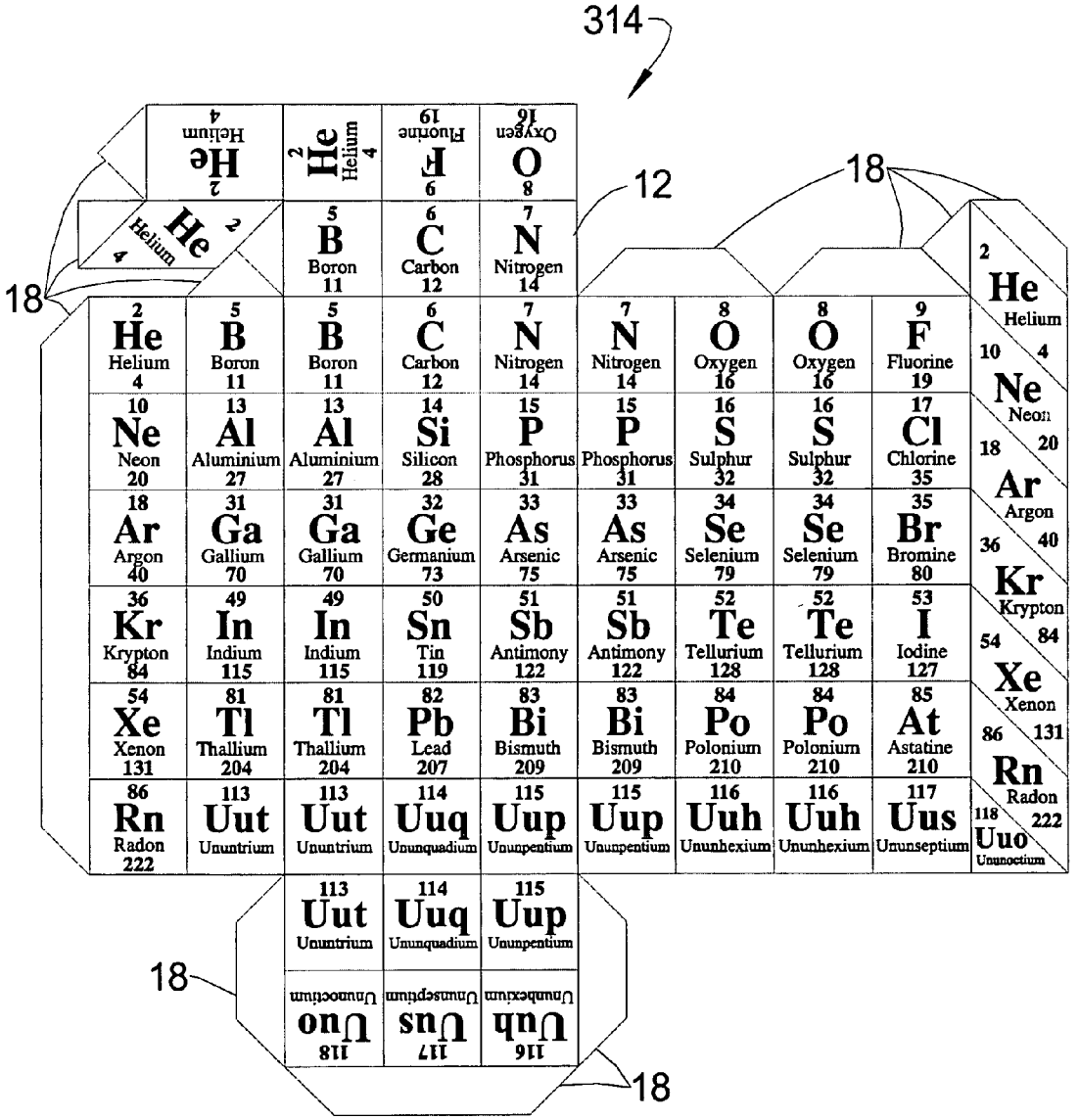

314
12
18
18
18
18
He Helium 2 4
B Boron 5 11
C Carbon 6 12
N Nitrogen 7 14
O Oxygen 8 16
F Fluorine 9 19
Ne Neon 10 20
Al Aluminium 13 27
Si Silicon 14 28
P Phosphorus 15 31
S Sulphur 16 32
Cl Chlorine 17 35
Ar Argon 18 40
Ga Gallium 31 70
Ge Germanium 32 73
As Arsenic 33 75
Se Selenium 34 79
Br Bromine 35 80
Kr Krypton 36 84
In Indium 49 115
Sn Tin 50 119
Sb Antimony 51 122
Te Tellurium 52 128
I Iodine 53 127
Xe Xenon 54 131
Tl Thallium 81 204
Pb Lead 82 207
Bi Bismuth 83 209
Po Polonium 84 210
At Astatine 85 210
Rn Radon 86 222
Uut Ununtrium 113
Uuq Ununquadium 114
Uup Ununpentium 115
Uuh Ununhexium 116
Uus Ununseptium 117
Uuo Ununoctium 118

Fig. 4

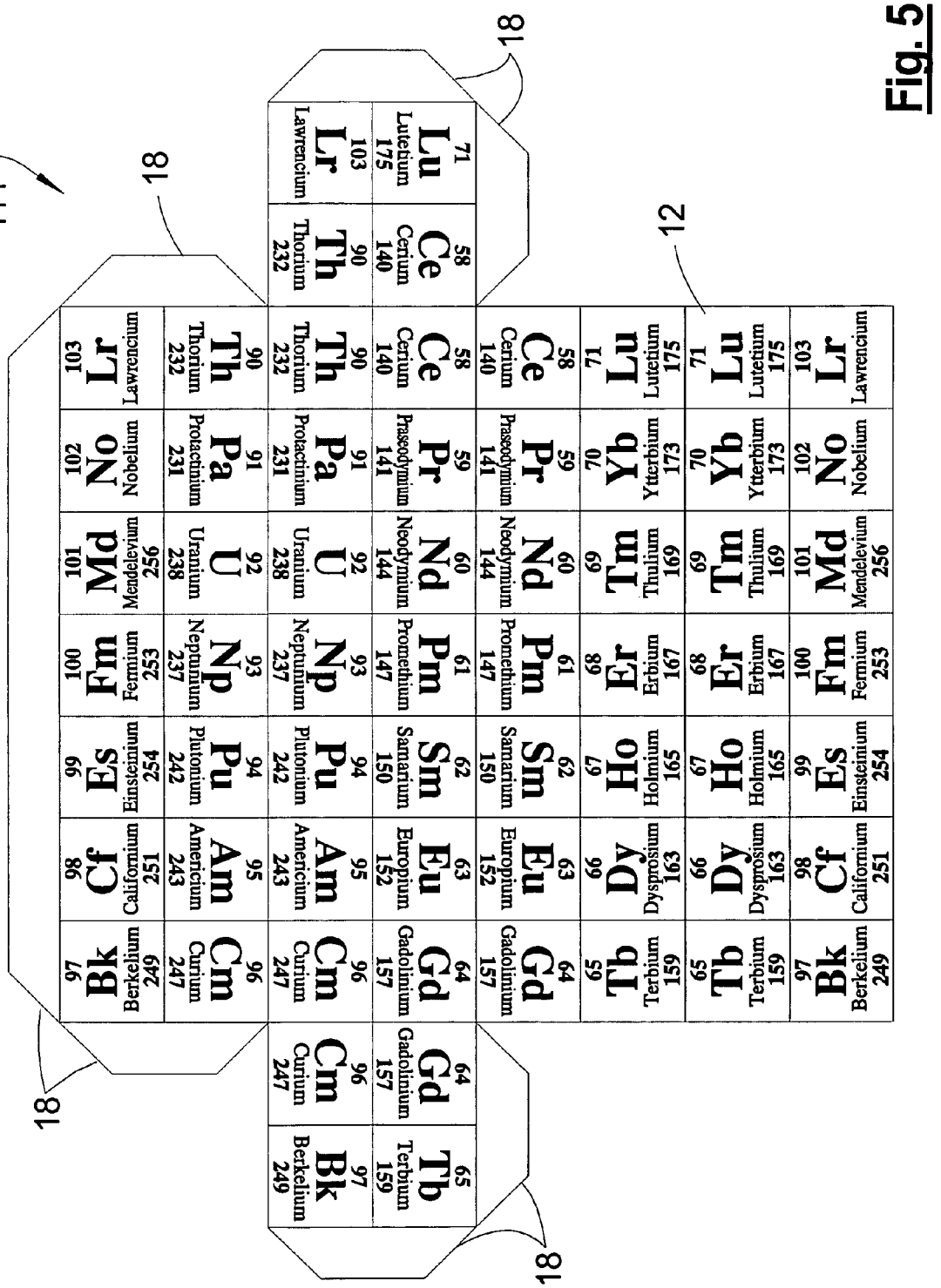

414
18
18
18
18
12
Lu Lutetium 175 71
Lr Lawrencium 103
Ce Cerium 140 58
Th Thorium 232 90
Ce Cerium 140 58
Th Thorium 232 90
Lr Lawrencium 103
Pr Praseodymium 141 59
Pa Protactinium 231 91
Pr Praseodymium 141 59
Pa Protactinium 231 91
No Nobelium 102
Nd Neodymium 144 60
U Uranium 238 92
Nd Neodymium 144 60
U Uranium 238 92
Md Mendelevium 256 101
Pm Promethium 147 61
Np Neptunium 237 93
Pm Promethium 147 61
Np Neptunium 237 93
Fm Fermium 253 100
Sm Samarium 150 62
Pu Plutonium 242 94
Sm Samarium 150 62
Pu Plutonium 242 94
Es Einsteinium 254 99
Eu Europium 152 63
Am Americium 243 95
Eu Europium 152 63
Am Americium 243 95
Cf Californium 251 98
Gd Gadolinium 157 64
Cm Curium 247 96
Gd Gadolinium 157 64
Cm Curium 247 96
Bk Berkelium 249 97
Tb Terbium 159 65
Dy Dysprosium 163 66
Ho Holmium 165 67
Er Erbium 167 68
Tm Thulium 169 69
Yb Ytterbium 173 70
Lu Lutetium 175 71
Ce Cerium 140 58
Lu Lutetium 175 71
Yb Ytterbium 173 70
Tm Thulium 169 69
Er Erbium 167 68
Ho Holmium 165 67
Dy Dysprosium 163 66
Tb Terbium 159 65
Tb Terbium 159 65
Dy Dysprosium 163 66
Ho Holmium 165 67
Er Erbium 167 68
Tm Thulium 169 69
Yb Ytterbium 173 70
Lu Lutetium 175 71
Lr Lawrencium 103
No Nobelium 102
Md Mendelevium 256 101
Fm Fermium 253 100
Es Einsteinium 254 99
Cf Californium 251 98
Bk Berkelium 249 97
Bk Berkelium 249 97
Cf Californium 251 98
Es Einsteinium 254 99
Fm Fermium 253 100
Md Mendelevium 256 101
No Nobelium 102
Lr Lawrencium 103

Fig. 5

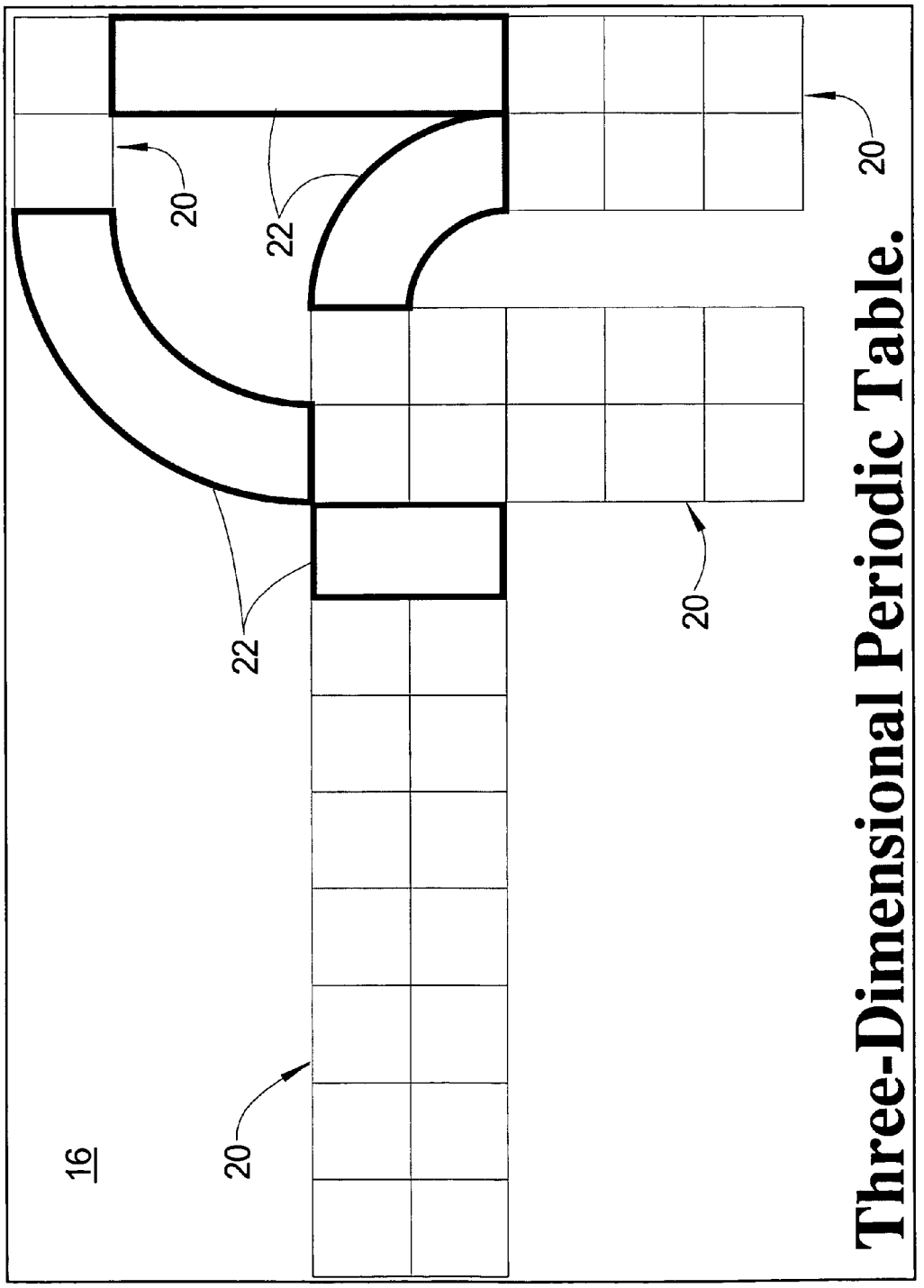


Fig. 6

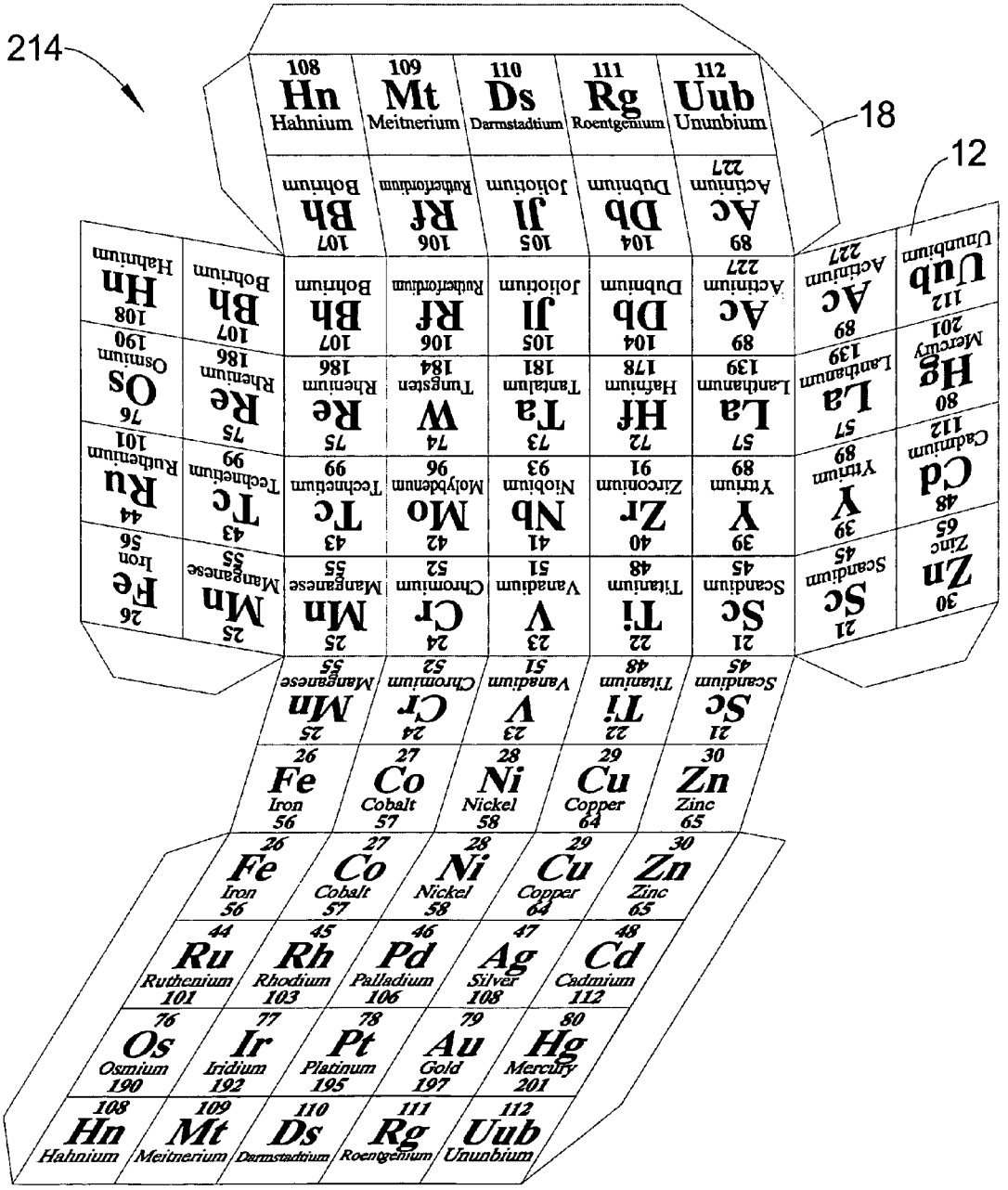
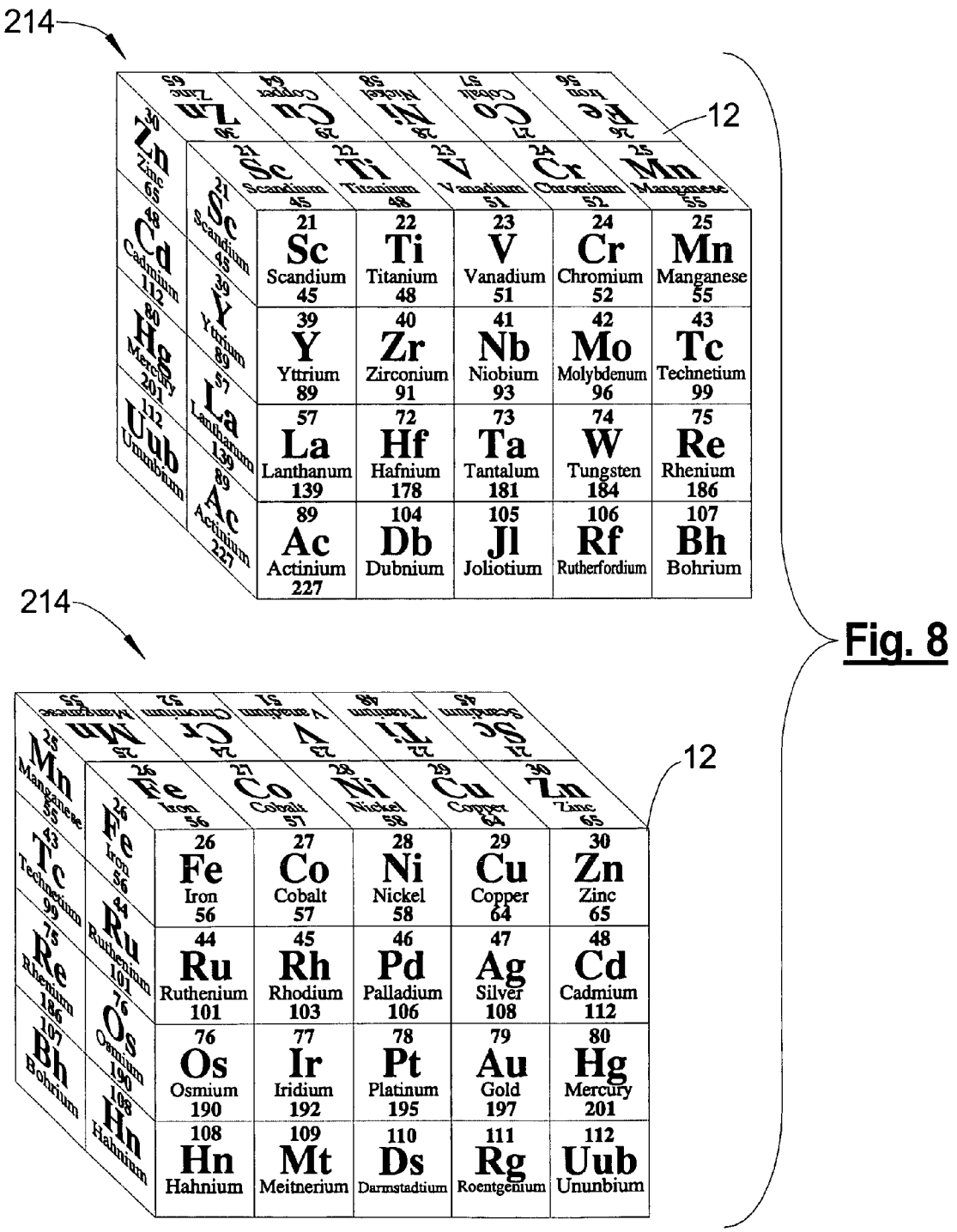

214
18
12
108 Hn Hahnium
109 Mt Meitnerium
110 Ds Darmstadtium
111 Rg Roentgenium
112 Uub Ununbium
107 Bh Bohrium
106 Rf Rutherfordium
105 Jl Joliotium
104 Db Dubnium
89 Ac Actinium 227
21 Sc Scandium 45
22 Ti Titanium 48
23 V Vanadium 51
24 Cr Chromium 52
25 Mn Manganese 55
26 Fe Iron 56
27 Co Cobalt 57
28 Ni Nickel 58
29 Cu Copper 64
30 Zn Zinc 65
39 Y Yttrium 89
40 Zr Zirconium 91
41 Nb Niobium 93
42 Mo Molybdenum 96
43 Tc Technetium 99
44 Ru Ruthenium 101
45 Rh Rhodium 103
46 Pd Palladium 106
47 Ag Silver 108
48 Cd Cadmium 112
57 La Lanthanum 139
72 Hf Hafnium 178
73 Ta Tantalum 181
74 W Tungsten 184
75 Re Rhenium 186
76 Os Osmium 190
77 Ir Iridium 192
78 Pt Platinum 195
79 Au Gold 197
80 Hg Mercury 201

Fig. 7



21 Sc Scandium 45	22 Ti Titanium 48	23 V Vanadium 51	24 Cr Chromium 52	25 Mn Manganese 55
39 Y Yttrium 89	40 Zr Zirconium 91	41 Nb Niobium 93	42 Mo Molybdenum 96	43 Tc Technetium 99
57 La Lanthanum 139	72 Hf Hafnium 178	73 Ta Tantalum 181	74 W Tungsten 184	75 Re Rhenium 186
89 Ac Actinium 227	104 Db Dubnium	105 Jl Joliotium	106 Rf Rutherfordium	107 Bh Bohrium

26 Fe Iron 56	27 Co Cobalt 57	28 Ni Nickel 58	29 Cu Copper 64	30 Zn Zinc 65
44 Ru Ruthenium 101	45 Rh Rhodium 103	46 Pd Palladium 106	47 Ag Silver 108	48 Cd Cadmium 112
76 Os Osmium 190	77 Ir Iridium 192	78 Pt Platinum 195	79 Au Gold 197	80 Hg Mercury 201
108 Hn Hahnium	109 Mt Meitnerium	110 Ds Darmstadtium	111 Rg Roentgenium	112 Uub Ununbium

Fig. 8

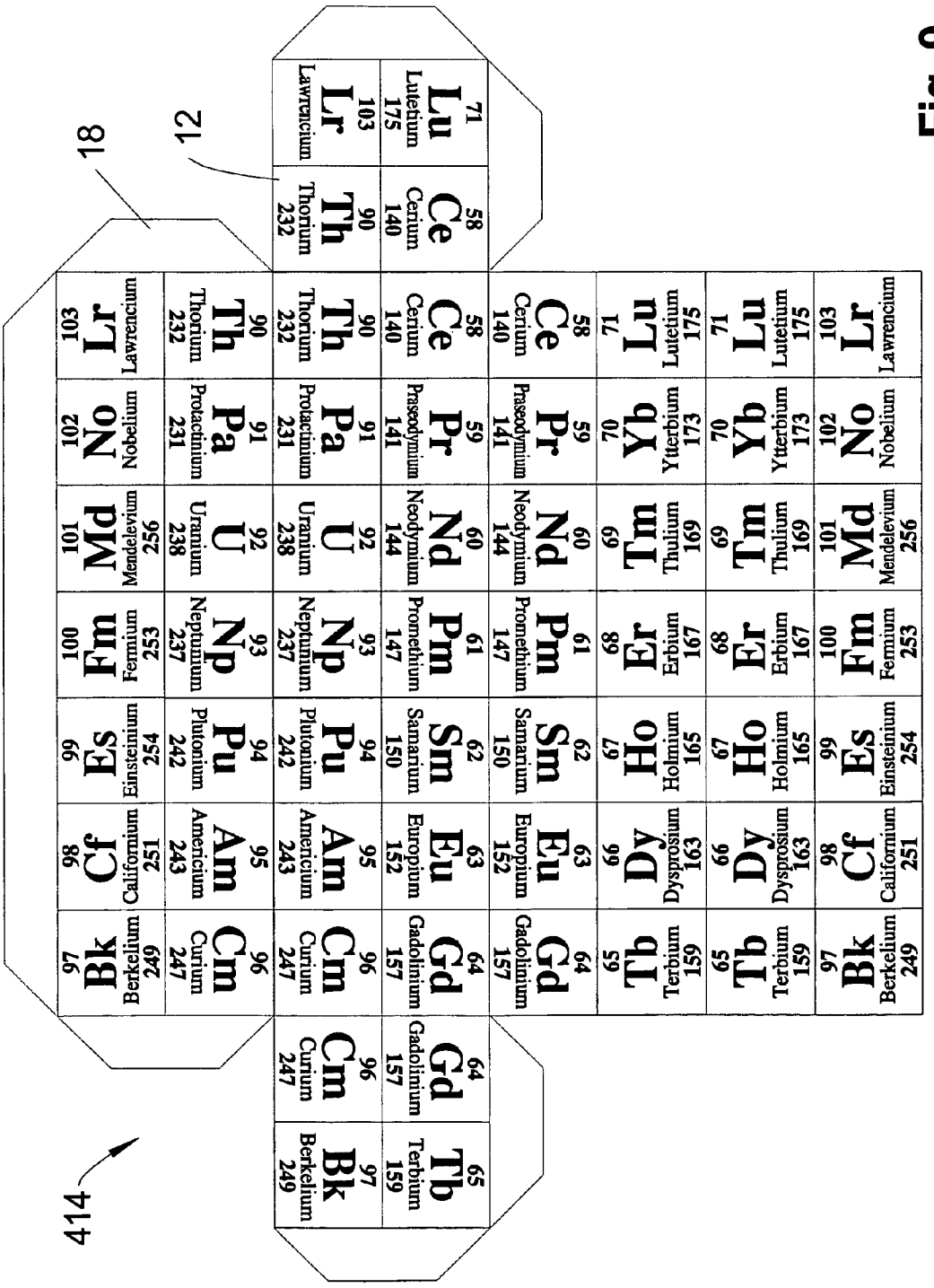
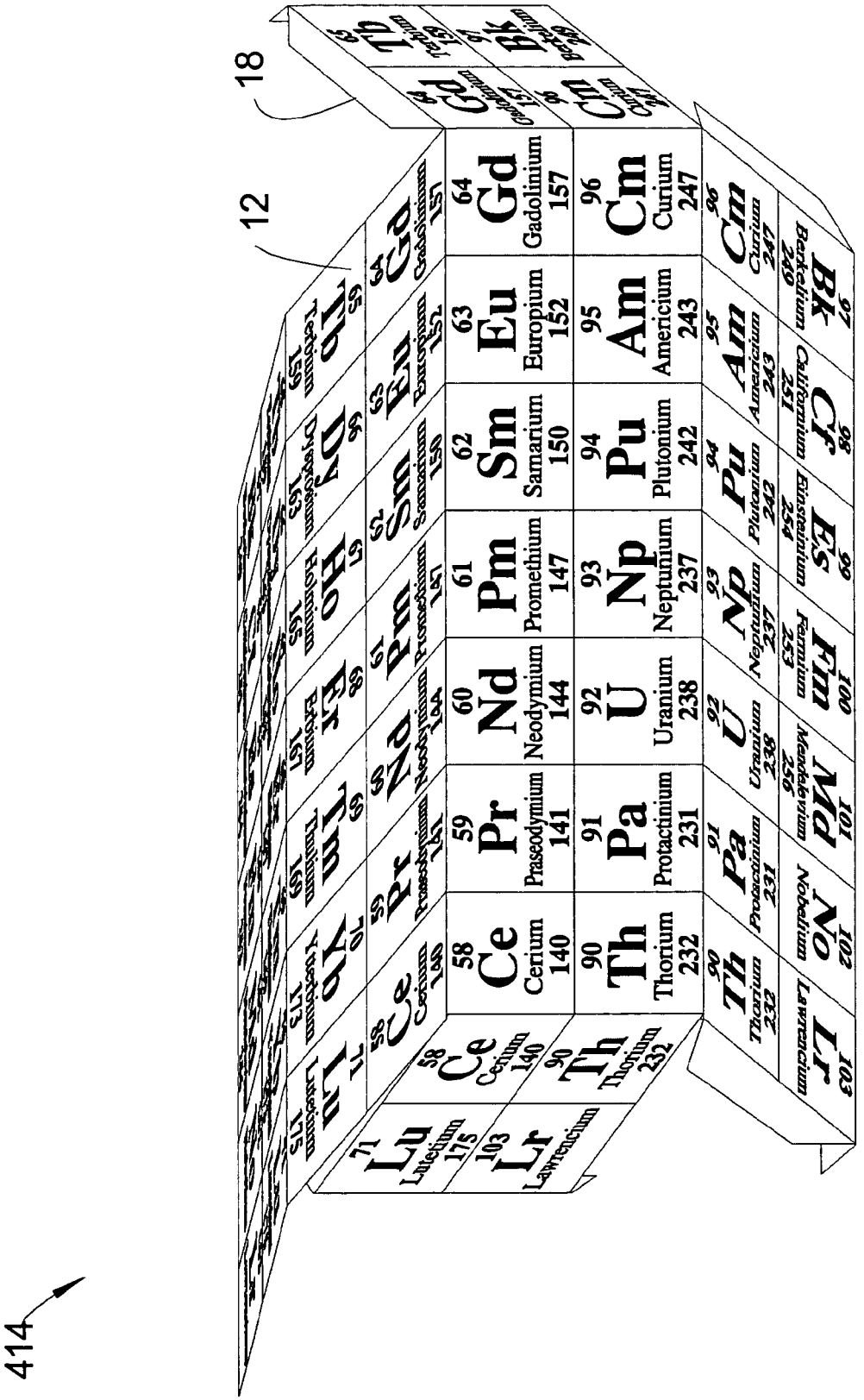

18
12
414
Lr Lawrencium 103
Lu Lutetium 175
Th Thorium 232
Ce Cerium 140
No Nobelium 102
Pr Praseodymium 141
Pa Protactinium 231
Th Thorium 232
Md Mendelevium 256
Nd Neodymium 144
U Uranium 238
Fm Fermium 253
Pm Promethium 147
Np Neptunium 237
Es Einsteinium 254
Sm Samarium 150
Pu Plutonium 242
Cf Californium 251
Eu Europium 152
Am Americium 243
Bk Berkelium 249
Dy Dysprosium 163
Cm Curium 247
Ho Holmium 165
Gd Gadolinium 157
Er Erbium 167
Tb Terbium 159
Tm Thulium 169
Yb Ytterbium 173

Fig. 9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12
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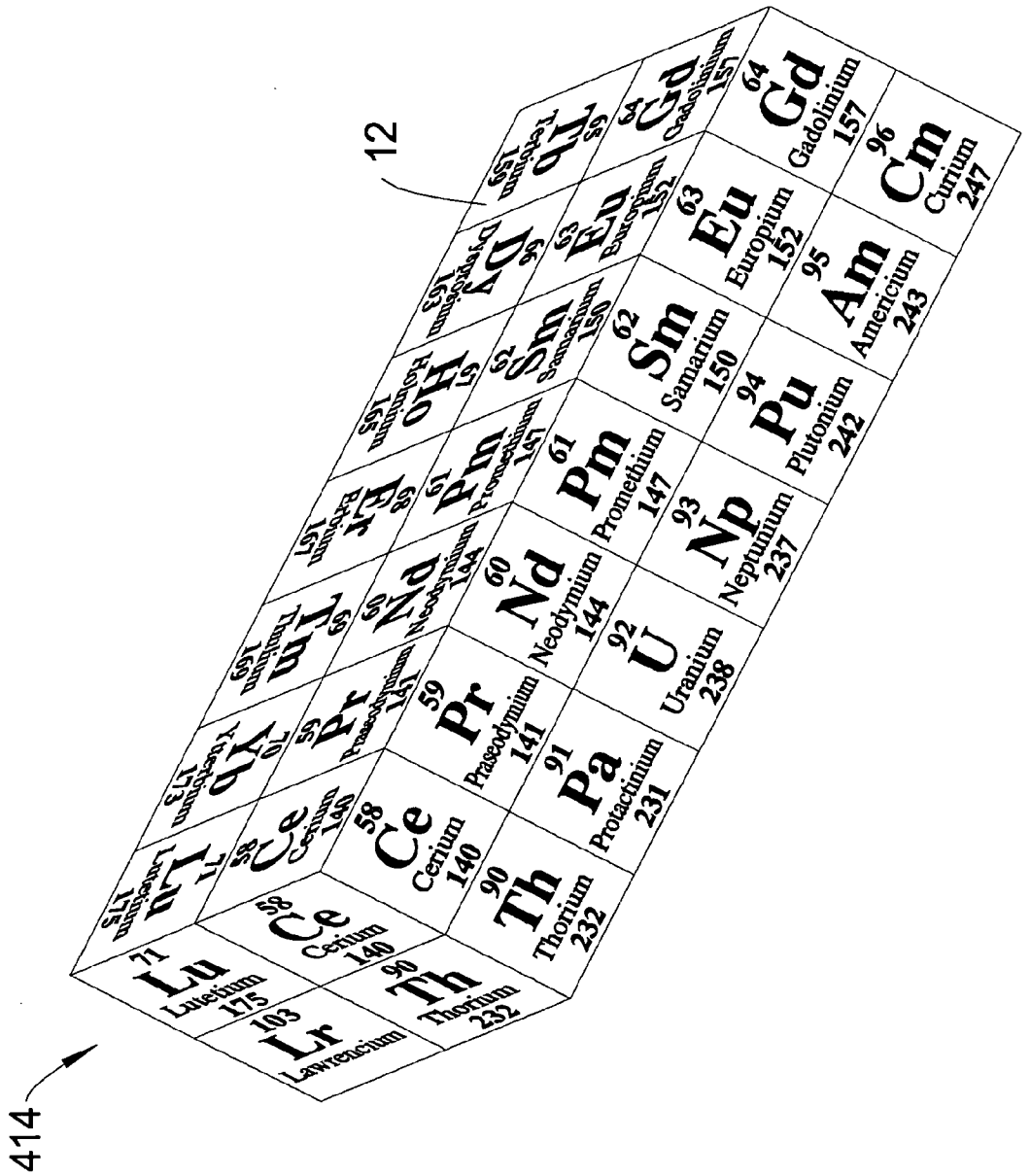
58 Ce Cerium 140
59 Pr Praseodymium 141
60 Nd Neodymium 144
61 Pm Promethium 147
62 Sm Samarium 150
63 Eu Europium 152
64 Gd Gadolinium 157
90 Th Thorium 232
91 Pa Protactinium 231
92 U Uranium 238
93 Np Neptunium 237
94 Pu Plutonium 242
95 Am Americium 243
96 Cm Curium 247
71 Lu Lutetium 175
103 Lr Lawrencium

Fig. 10

Fig. 11


12
414
71 Lu Lutetium 175
103 Lr Lawrencium
58 Ce Cerium 140
90 Th Thorium 232
59 Pr Praseodymium 141
91 Pa Protactinium 231
60 Nd Neodymium 144
92 U Uranium 238
61 Pm Promethium 147
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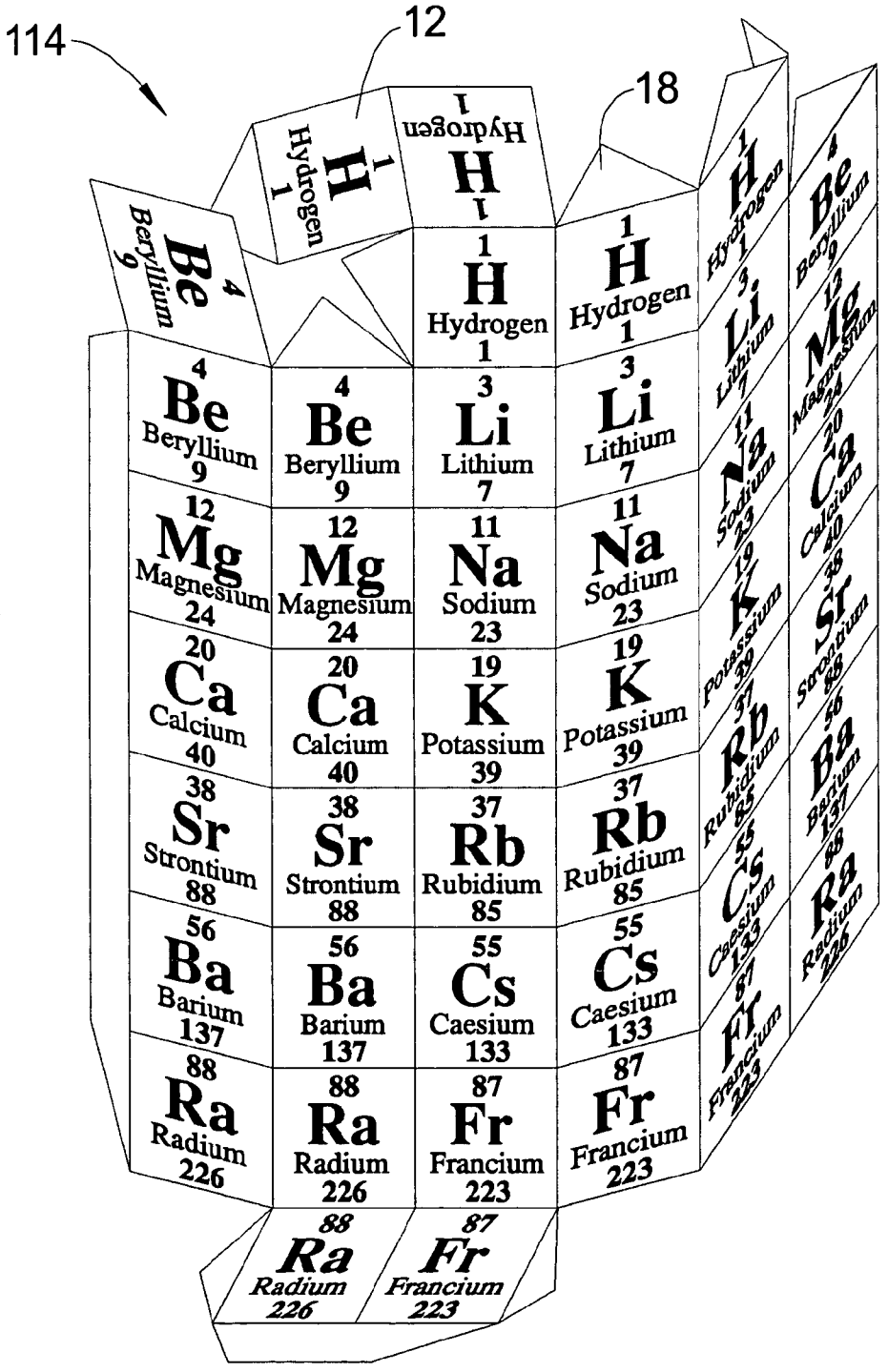
63 Eu Europium 152
95 Am Americium 243
64 Gd Gadolinium 157
96 Cm Curium 247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12
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H
Beryllium
9
Be
Hydrogen
1
H
Beryllium
9
Be
Lithium
7
Li
Magnesium
24
Mg
Sodium
23
Na
Calcium
40
Ca
Potassium
39
K
Strontium
88
Sr
Rubidium
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Rb
Barium
137
Ba
Caesium
133
Cs
Radium
226
Ra
Francium
223
Fr

Fig. 12

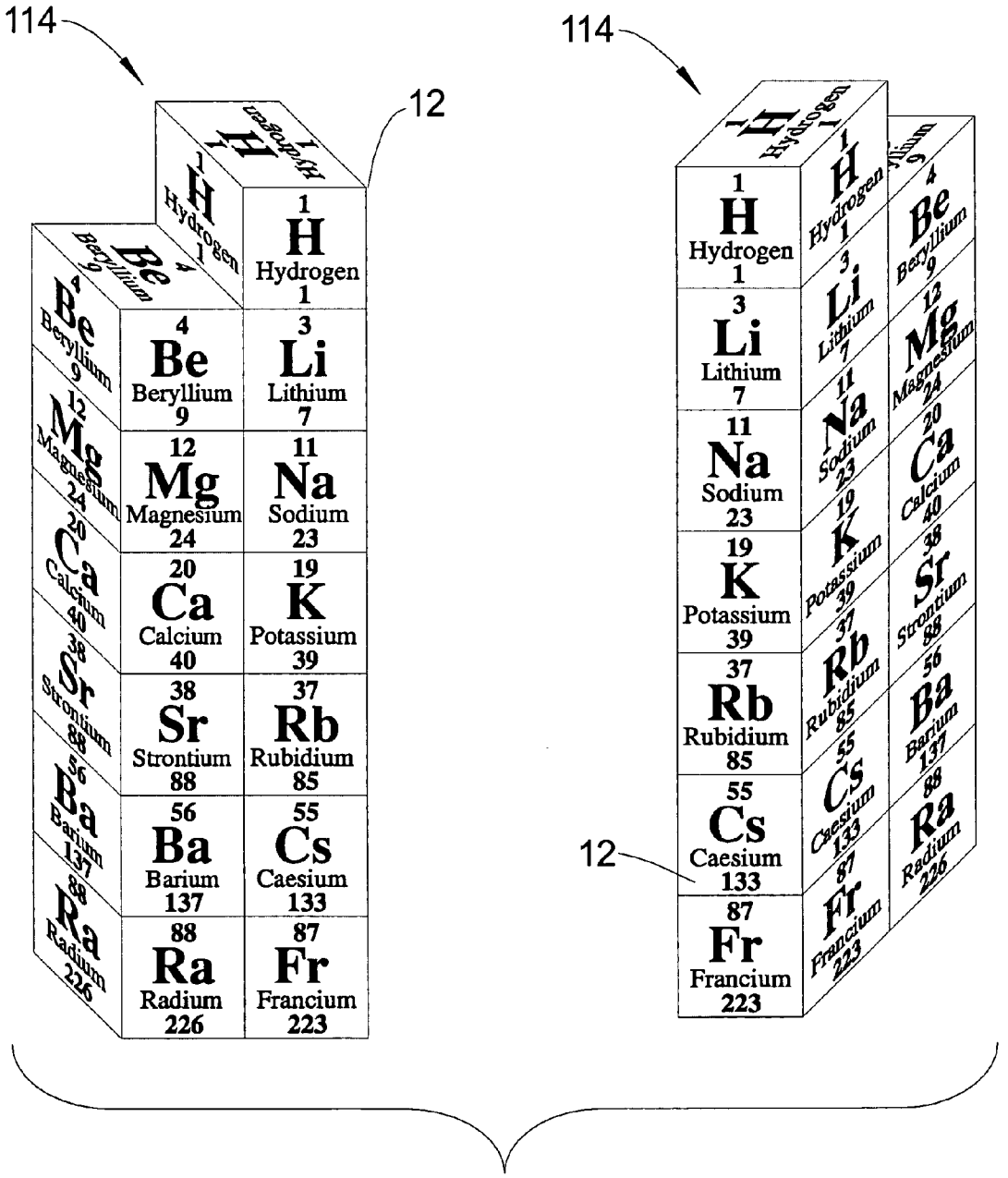
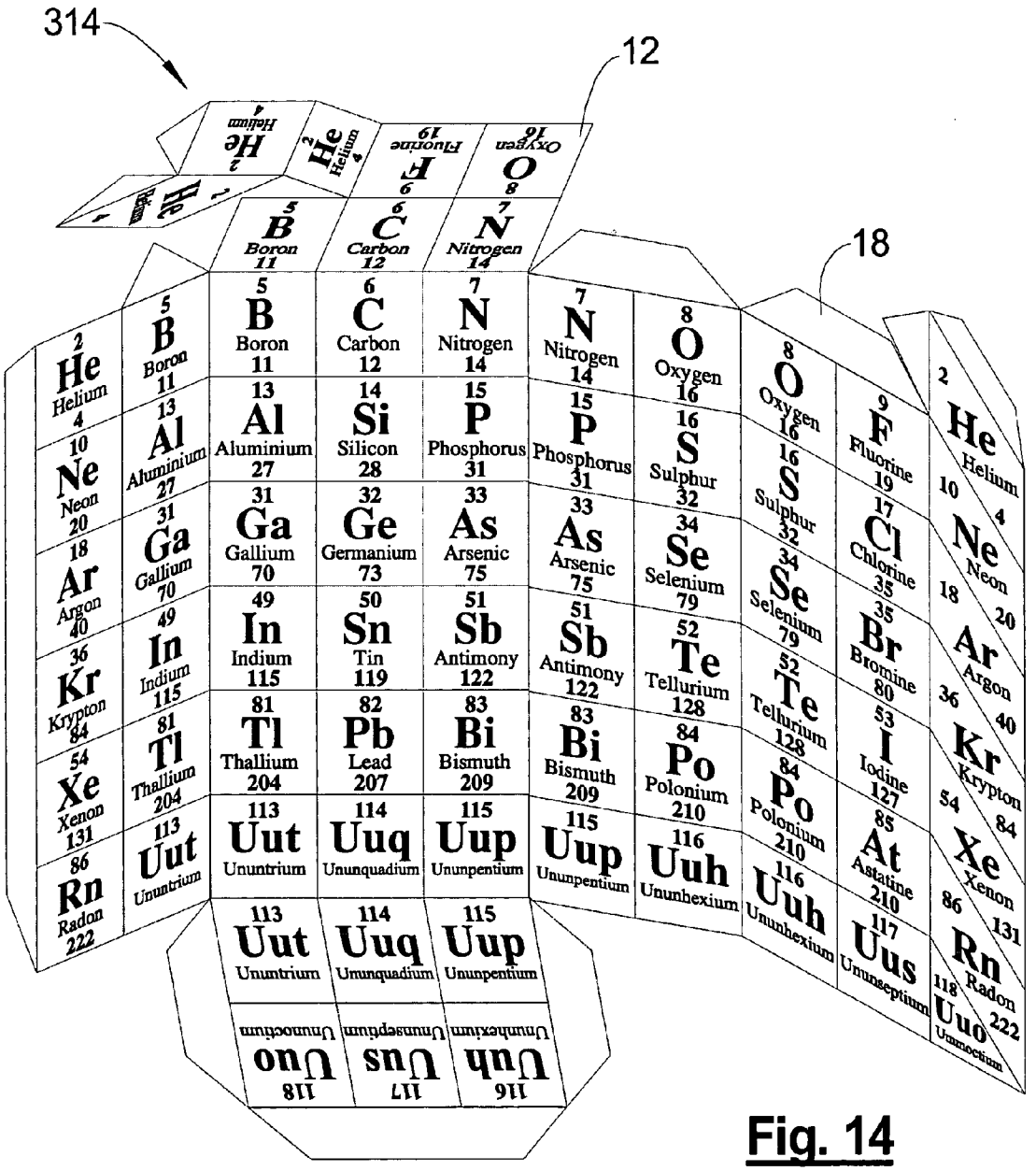

114
12
1 H Hydrogen 1
4 Be Beryllium 9
12 Mg Magnesium 24
20 Ca Calcium 40
38 Sr Strontium 88
56 Ba Barium 137
88 Ra Radium 226
3 Li Lithium 7
11 Na Sodium 23
19 K Potassium 39
37 Rb Rubidium 85
55 Cs Caesium 133
87 Fr Francium 223
114
12

Fig. 13


314
12
18
He Helium 2 4
Ne Neon 10 20
Ar Argon 18 40
Kr Krypton 36 84
Xe Xenon 54 131
Rn Radon 86 222
B Boron 5 11
Al Aluminium 13 27
Ga Gallium 31 70
In Indium 49 115
Tl Thallium 81 204
Uut Ununtrium 113
B Boron 11
C Carbon 12
N Nitrogen 14
Al Aluminium 27
Si Silicon 28
P Phosphorus 31
Ga Gallium 70
Ge Germanium 73
As Arsenic 75
In Indium 115
Sn Tin 119
Sb Antimony 122
Tl Thallium 204
Pb Lead 207
Bi Bismuth 209
Uut Ununtrium 113
Uuq Ununquadium 114
Uup Ununpentium 115
N Nitrogen 14
P Phosphorus 31
As Arsenic 75
Sb Antimony 122
Bi Bismuth 209
Uup Ununpentium 115
O Oxygen 8 16
S Sulphur 16 32
Se Selenium 34 79
Te Tellurium 52 128
Po Polonium 84 210
Uuh Ununhexium 116
O Oxygen 16
S Sulphur 32
Se Selenium 79
Te Tellurium 128
Po Polonium 210
Uuh Ununhexium 116
F Fluorine 9 19
Cl Chlorine 17 35
Br Bromine 35 80
I Iodine 53 127
At Astatine 85 210
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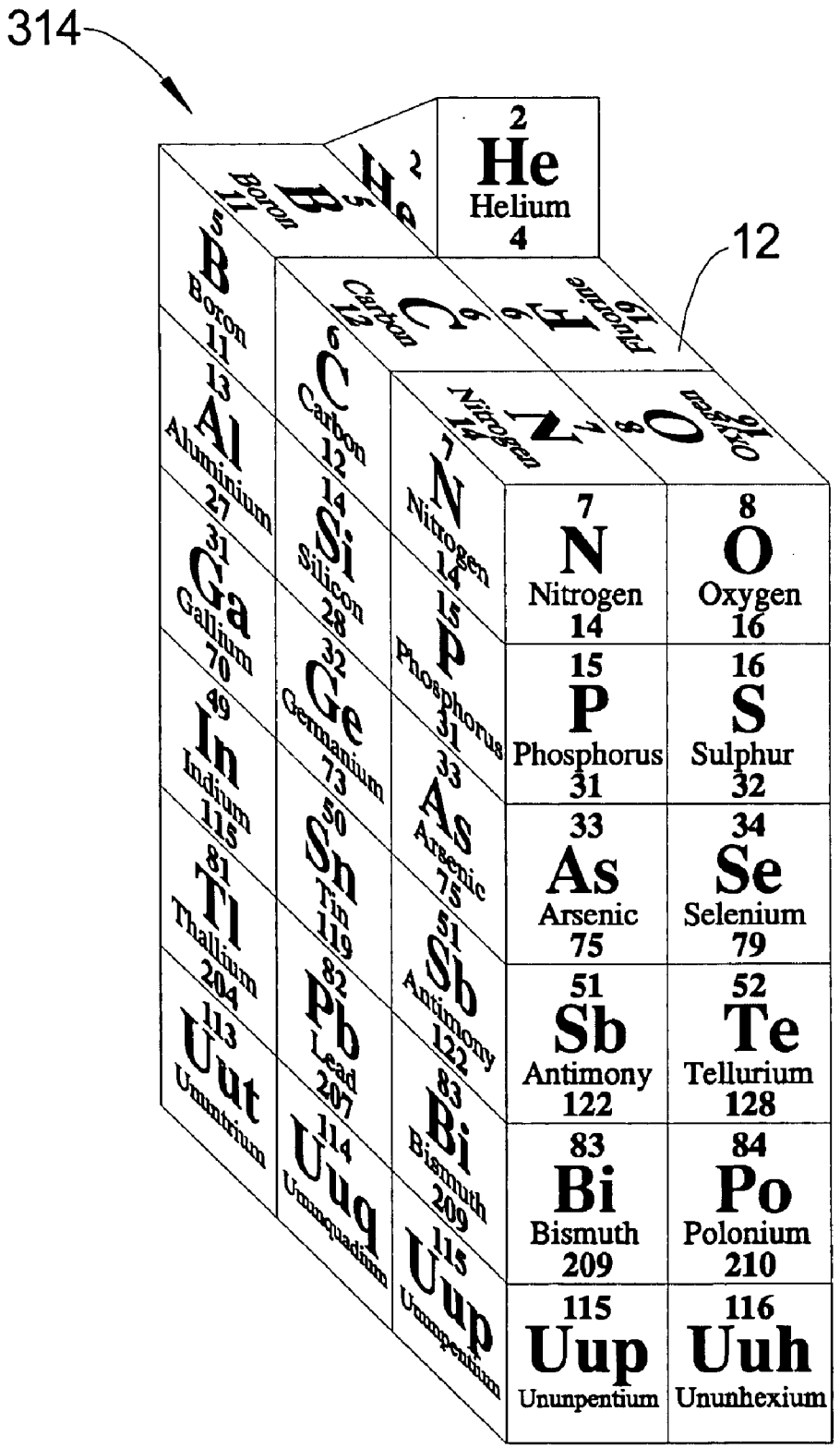
Uuo Ununoctium 118
Uus Ununseptium 117
Uuo Ununoctium 118

Fig. 14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12
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He
Helium
4
7
N
Nitrogen
14
8
O
Oxygen
16
15
P
Phosphorus
31
16
S
Sulphur
32
33
As
Arsenic
75
34
Se
Selenium
79
51
Sb
Antimony
122
52
Te
Tellurium
128
83
Bi
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Po
Polonium
210
115
Uup
Ununpentium
116
Uuh
Ununhexium

Fig. 15

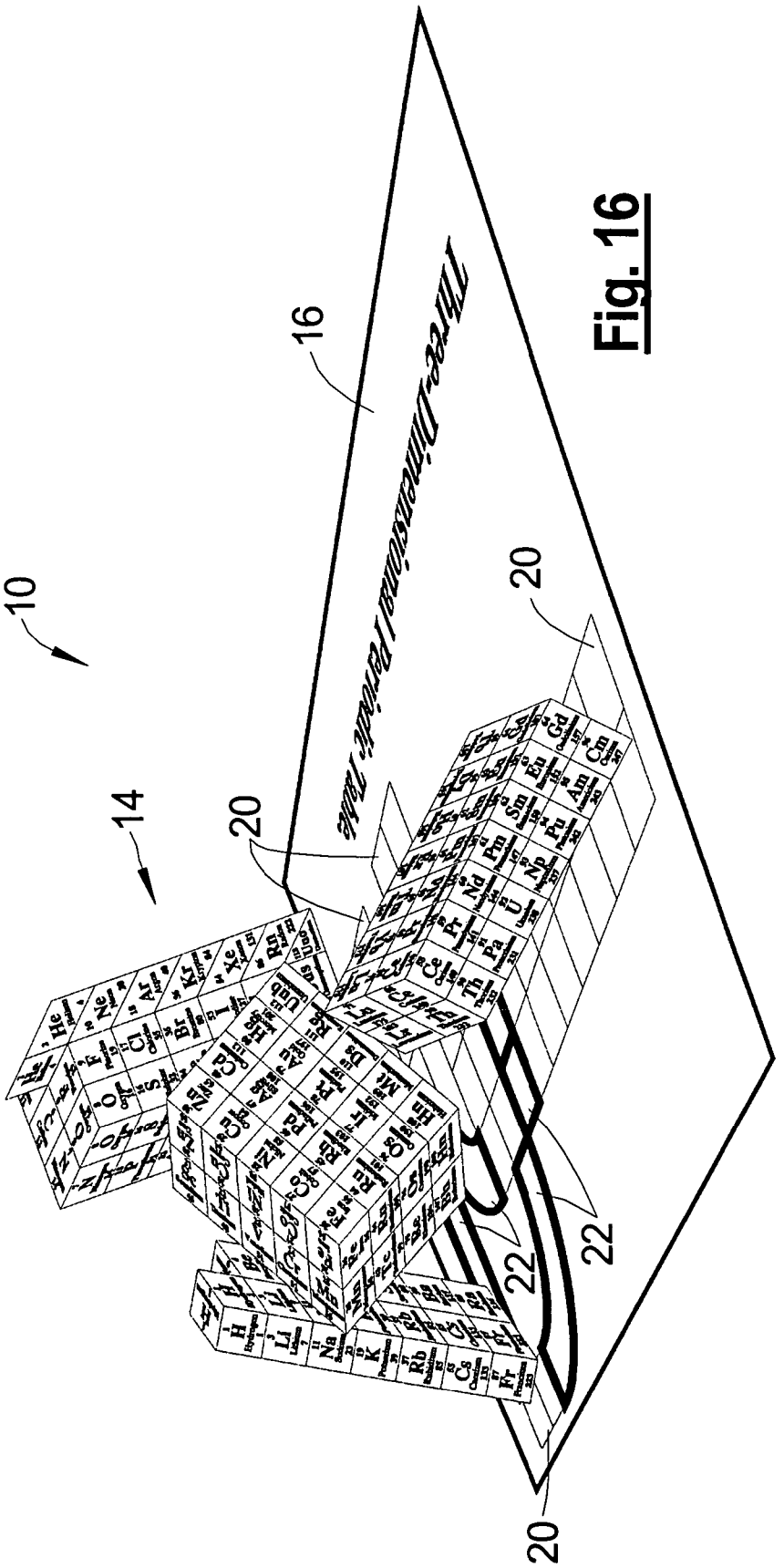

Fig. 16

THREE-DIMENSIONAL PERIODIC TABLE

FIELD OF THE INVENTION

[0001] This invention relates to a periodic table of the chemical elements as a tool for learning about the elements.

BACKGROUND OF THE INVENTION

[0002] It is generally accepted in physics and chemistry that the universe is made up of a number of stable and less stable elements ranging in progressive units of atomic masses. The periodic law states that the properties of the chemical elements and their compounds are a periodic function of their atomic number. The periodic table is a table of the elements written in sequence in the order of atomic number and arranged in horizontal rows (periods) and vertical columns (groups) to illustrate the occurrence of similarities in the properties of the elements as a periodic function of the sequence. Present versions of the table used in texts have remained essentially unchanged for the past fifty years, except for the addition of new elements.

[0003] Every chemistry laboratory and classroom has a periodic table displayed. It can be difficult, however, to engage students to learn about the elements with a conventional periodic table. Also, the significance of the natural grouping of elements shown by the periodic table may be lost on many students, and some heavier elements might be completely ignored. Therefore a periodic table of the elements and a method of learning about the elements that engage students to learn about the elements, including the most unusual of them, and that helps students see the groupings of the elements within the table are needed.

[0004] U.S. Pat. No. 3,581,409, by Roy H. Alexander teaches a three dimensional symbolic representation of the elements with fully grouped families including the Rare Earth series is presented in which the symbolic representations of the elements are arranged contiguously and continuously according to the atomic number. Alexander teaches an arrangement of the elements that includes a single three dimensional form with the elements arranged according to atomic number and without interruption of the atomic number. Therefore a three dimensional representation of the elements with multiple three dimensional forms to be assembled and which challenges a student to thereby encourage learning about the elements is needed.

[0005] U.S. Pat. No. 4,199,876, by Gerson Katz teaches a device for displaying a periodic table of the chemical elements. Katz's table includes four detachable, coaxially mounted cylinders. Each cylinder is divided into an upper cylindrical section and a lower cylindrical section. The sections are also detachably mounted. The upper surfaces of each of the cylindrical sections are marked with discrete sectors containing indicia that denote the chemical elements. The device can also be used to determine n and l numbers of quantum theory for selected elements. An aid that has a transverse surface marked to correspond to the discrete sectors on the upper surfaces of the cylindrical sections is used to determine m_l and m_s numbers of quantum theory for selected elements. A second device for displaying the periodic table of the elements is in the form of four detachable, concentrically mounted spheres. The surface of each of the spheres is divided into an upper hemisphere and a lower hemisphere. The hemispheres are preferably detachably mounted. The outer surface of each of the hemispheres is marked with discrete sectors containing indicia that denote the chemical elements. The tables taught by Katz do not readily depict the natural groupings of the elements, such as the transition metals and alkaline groups. Further, since the spheres taught by Katz are concentrically mounted, the inner spheres are at least partially concealed by the outer spheres. Therefore an improved three dimensional periodic table that readily displays the natural groupings of the elements and which does not conceal information about any of the elements is needed.

SUMMARY OF THE INVENTION

[0006] The invention comprises, in one form thereof, a three dimensional periodic table of the chemical elements and a method of learning about the periodic nature of the elements. The invention comprises several cardboard or paper sheets, each having a plurality of blocks that display information about particular elements. The blocks are arranged in groupings of elements with similar properties, such as the transition Earth metals. Students follow a set of instructions provided with the sheets to cut out the groups, fold along particular lines, and affix tabs together to assemble several three dimensional forms. The students then place the forms on a planar map that indicates where to place each form and indicates how to follow the periods of elements between the forms.

[0007] More particularly, the invention includes a periodic representation of the elements, which comprises a plurality of three-dimensional forms, and a plurality of element representations displayed on each of the forms. Each of the element representations displays information about a particular element and the three dimensional forms are displayed in proximity to each other on a planar map such that all of the forms may be viewed together.

[0008] In another form, the invention includes a periodic representation of the elements, which comprises a plurality of planar sheets, a plurality of element representations printed on each of the sheets in one or more groupings, and a plurality of tabs in communication with each of the groupings.

[0009] In a further form, the invention includes a kit for assembling a three-dimensional periodic representation of the elements, which comprises a plurality of planar sheets, a plurality of element representations printed on each of the sheets in one or more groupings, a plurality of tabs in communication with each of the groupings, and a set of instructions for cutting out the groupings from the sheets and assembling the groupings into a plurality of three-dimensional forms.

[0010] In an even further form, the invention includes a method of teaching a student about the elements. The method comprises the steps of obtaining a plurality of planar sheets, each of which include a plurality of element representations printed thereon in one or more groupings and a plurality of tabs in communication with each of the groupings. A set of instructions is followed for creating a plurality of three-dimensional forms from the sheets. The groupings are cut out from the sheets according to the instructions and assembled into the three-dimensional forms. The student then observes the element representations of common and

uncommon elements as well as the groupings of element representations, which display information about elements having similar properties.

[0011] An advantage of the present invention is that the three dimensional periodic table and method of learning about the elements engage students to learn about the elements, including the most unusual of them, and helps students see the groupings of the elements within the table. The instant periodic table also displays information about the elements on several three dimensional forms without concealing any of the information. In addition to learning about chemistry, students learn about working in groups and other important life skills.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The above-mentioned and other features and advantages of this invention, and the manner of attaining them, will become apparent and be better understood by reference to the following description of one embodiment of the invention in conjunction with the accompanying drawings, wherein:

[0013] FIG. **1** is an isometric view of the three dimensional periodic table of the chemical elements of the present invention;

[0014] FIGS. **2-5** are plan views of several planar sheet of the present invention;

[0015] FIG. **6** is a plan view of a planar map of FIG. **1**;

[0016] FIGS. **7-16** are isometric views of the groupings of element representations in various stages of assembly.

[0017] Corresponding reference characters indicate corresponding parts throughout the several views. The example set out herein illustrates one embodiment of the invention but should not be construed as limiting the scope of the invention in any manner.

DETAILED DESCRIPTION

[0018] Referring to FIG. **1**, there is shown the three dimensional periodic table of the chemical elements of the present invention. The three dimensional periodic table **10** includes a plurality of element representations **12**, arranged in a plurality of groupings **14**, which are shown in assembled three dimensional forms in FIG. **1**, and a substantially planar map **16**.

[0019] The element representations **12** are substantially rectangular in shape and include information about the element, such as the atomic number, the chemical symbol, the atomic mass, the element name, the natural state of the element at room temperature and atmospheric pressure, and the number of valence electrons. The element representations **12** may also be color-coded to indicate properties of the element. For example, the element representations **12** may be colored according to whether they are metals, metalloids, or non-metals. Alternatively, the element representations **12** may be colored according to the state of matter of the element for a particular temperature and pressure. In a further alternative, the element representations **12** are colored according to the color of the element, the compound, or the flame colors. Even further, the element representations **12** may be colored according to a particular design that is pleasing to the eye or attention grabbing. Certain element representations **12** on the edges of the three dimensional groupings **14**, such as those for Carbon (C) and Nitrogen (N), have multiple faces that are angled at about 90° from each other in order to promote the idea that the element representations **12** are three dimensional blocks.

[0020] The groupings **14** are shown in substantially two dimensional nets in FIGS. **2-5**. The planar nets are printed on sheets of paper with one or more groupings **14** on each sheet. In the present embodiment, the paper is a card-type paper of a weight that may be cut with scissors yet requires score lines for folding. Alternatively, paper having more or less flexibility may be used. Further, alternative materials such as certain plastics may be used in place of paper. Each of the groupings **14** includes a plurality of tabs **18** that may be glued to the underside of certain element representations **12** or to other tabs **18** for assembly of the three dimensional forms. The groupings **14** may include blank portions to fill in the three dimensional forms. Additional element representations **12** corresponding to newly discovered elements may be added to the blank portions at a later date. The layout of the element representations **12** and tabs **18** in the nets shown in the figures are by way of example and myriad alternative layouts may be imagined. Also, element names and positions may need to be changed in the future according to changes in standards, such as those set by the International Union of Pure and Applied Chemistry (IUPAC).

[0021] The grouping **114** in FIG. **2** includes the element representations **12** for hydrogen and the elements in groups **1** and **2**, respectfully known as the Alkali metals and the Alkaline earth metals. The grouping **214** in FIG. **3** includes the element representations **12** for the transition metals. The grouping **314** in FIG. **4** includes the element representations **12** for groups **3-8**, wherein groups **7** and **8** are also known as the Halogens and Noble gases, respectively. Groups **3-6** include some non metals, the metalloids, and some metals. The grouping **414** in FIG. **5** includes the element representations **12** for the transition elements known as the Lanthanides and the Actinides or the Rare Earth/Actinide Groups.

[0022] The substantially planar map **16**, shown in FIG. **6**, includes a plurality of grids **20**, each of which are in the shape of the footprint of one of the groupings **114**, **214**, **314**, or **414** to indicate the placement of the groupings **14** when in the three dimensional form. Several pathways **22** between each of the grids **20** indicate that the periods are viewed by following the horizontal rows between the groupings **14**. For example, period **2** starts with lithium (Li) and beryllium (Be) in grouping **114** and continues to the grouping **314** with boron (B), carbon (C), etc. The viewer knows to skip the grouping **214** because there are no element representations **12** that extend vertically off the planar map **16** to period **2** in the grouping **214**. In another example, period **6** starts with cesium (Cs) and barium (Ba) in grouping **114**, continues to lanthanum (La) in grouping **214**, then to cerium (Ce) through lutetium (Lu) in grouping **414**, continues back to grouping **214** with hafnium (Hf) through mercury (Hg), and ends with thallium (Tl) through radon (Rn) in grouping **314**. The atomic number included with the element representations aids the viewer in following the periods as well.

[0023] In use, a kit containing sheets of the groupings **14** in substantially planar form, the map **16**, and a set of

instructions are supplied to a student or a group of students. The instructions guide the student through the assembly of the three dimensional periodic table **10**. The instructions also include several diagrams, illustrated in FIGS. **7-16**, to aid in the assembly. A particular example of such instructions is as follows. It should be noted, however, that the set of instructions included in the kit may vary in detail from the following example.

EXAMPLE 1

[**0024**] Identify each of the blocks of elements from the four printed.

[**0025**] The two nets which comprise:

a) The Transition Metals (grouping **214**) (FIGS. **7** and **8**)

b) The Rare Earth/Actinide Groups (grouping **414**) (FIGS. **9**, **10** and **11**)

will form rectangular blocks when assembled so begin with these two.

[**0026**] Alter carefully cutting out the net for the Transition Metals (grouping **214**), score all the fold lines on the back of the card and then generate sharp folds along each score line, especially adjacent to the tabs **18**, as shown in FIG. **7**.

[**0027**] Practice the assembly into a rectangular block before placing any glue on any of the tabs **18**, as shown in FIG. **8**.

[**0028**] When sure of the final outcome, add a small amount of quick drying glue to each tab **18** and assemble the rectangular block, as shown in FIG. **8**.

[**0029**] Next, carefully cut out the net for the elements in the Rare Earth/Actinide Groups (grouping **414**) shown in FIG. **9**.

[**0030**] Score all the fold lines on the back of the card and then generate sharp folds along each score line, especially adjacent to the tabs **18**, as shown in FIG. **10**.

[**0031**] When sure of the final outcome, add a small amount of quick drying glue to each tab **18** and assemble the rectangular block, as shown in FIG. **11**.

[**0032**] Next, carefully cut out the net for the elements in Groups **1** and **2**, together with hydrogen (grouping **114**), as shown in FIG. **12**. At this stage, do not cut off any tabs **18** in the vicinity of hydrogen.

[**0033**] Score all the fold lines on the back of the card and then generate sharp folds along each score line, especially adjacent to the tabs **18**, as shown in FIG. **12**.

[**0034**] Practice the assembly into a rectangular block with hydrogen perched on top of lithium. Check where each tab **18** will be glued and positioned and then remove any superfluous tabs **18**; double check before cutting.

[**0035**] When sure of the final outcome, add a small amount of quick drying glue to each tab **18** and assemble the block for Groups **1** and **2** (grouping **214**), as shown in FIG. **13**.

[**0036**] Next, carefully cut out the net for the elements in Groups **3** to **8** (grouping **314**) as shown in FIG. **14**. At this stage, do not cut off any tabs **18** in the vicinity of helium.

[**0037**] Score all the fold lines on the back of the card and then generate sharp folds along each score line, especially adjacent to the tabs **18**, as shown in FIG. **14**.

[**0038**] Practice the assembly of the block with the Noble Gases, e.g. helium, slanting downwards to the next Period as shown in FIG. **15**. Check where each tab **18** will be glued and positioned and then remove any superfluous tabs **18**; double check before cutting.

[**0039**] When sure of the final outcome, add a small amount of quick drying glue to each tab **18** and assemble the block as shown in FIG. **15**.

[**0040**] Now that all four blocks of elements have been constructed, position them on the map **16** so that their relative position follows an increasing of atomic number as shown in FIG. **16** and FIG. **1**.

[**0041**] The set of instructions may also include several questions to encourage a student to think about the periodic table and the chemical elements. Such questions may include those in the following example. Hints and answers to the questions may also be provided to aid the students.

EXAMPLE 2

Questions: (A few suggestions) (Various Grades, no particular order)

1. Name all the elements in each of Groups **1** to **4**.

2. Why do the blocks contain the number of elements per period that they do? (Hint: consider the number of electrons ins, p, d, f-energy levels)

3. Why do the blocks "double back" on themselves? (Hint: Hundt's Rule)

4. Look carefully at some of the coloring of the elements and comment on the colors you find.

5. Look carefully for elements that are found in the molecules of life (fats, proteins, carbohydrates, DNA, RNA, etc) and comment on their relative position considering the large number of elements that exist.

6. List and then find the elements that are present in

a. an electric cable

b. a Teflon coated frying pan

c. a nuclear fuel rod

7. Why aluminium and sulphur rather than aluminum and sulfur?

[**0042**] While the invention has been described with reference to particular embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the scope of the invention.

[**0043**] Therefore, it is intended that the invention not be limited to the particular embodiments disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope and spirit of the appended claims.

1. A periodic representation of the chemical elements, comprising:

a plurality of three-dimensional forms;

a plurality of element representations displayed on each of said forms;

wherein each of said element representations displays information about a particular element; and

wherein said three dimensional forms are displayed in proximity to each other on a substantially planar map such that all of said forms may be viewed together.

2. The periodic representation of the chemical elements of claim 1, wherein said map indicates a particular arrangement for said three-dimensional forms.

3. The periodic representation of the chemical elements of claim 2, wherein said element representations are configured such that the periodic nature of the elements is apparent due to the arrangement of said three-dimensional forms indicated by said map.

4. The periodic representation of the chemical elements of claim 1, wherein the information displayed by said element representations is selected from the group consisting of atomic symbol, atomic number, atomic mass, the name of the element, the natural state of the element at room temperature and atmospheric pressure, and the number of valence electrons.

5. The periodic representation of the chemical elements of claim 4, wherein each of said element representations located on a particular three-dimensional form includes information about elements in a particular category.

6. A periodic representation of the chemical elements, comprising;

a plurality of sheets;

a plurality of element representations printed on each of said sheets in one or more groupings; and

a plurality of tabs in communication with each of the groupings.

7. The periodic representation of the chemical elements of claim 6, wherein each grouping of said element representations is cut out of said sheets along an outer boundary, which also encompasses said tabs.

8. The periodic representation of the chemical elements of claim 7, wherein each of the groupings is folded into a three-dimensional form by folding between certain element representations and affixing each of said tabs to certain other tabs.

9. The periodic representation of the chemical elements of claim 6, wherein each of said element representations comprises information about a particular element, said information being selected from the group consisting of atomic symbol, atomic number, atomic mass, the name of the element, the natural state of the element at room temperature and atmospheric pressure, and the number of valence electrons.

10. The periodic representation of the chemical elements of claim 9, wherein each of the groupings of element representations includes information about elements having similar properties.

11. The periodic representation of the chemical elements of claim 9, wherein a first grouping comprises element representations of elements in the Alkali metals and the Alkaline earth metals groups, a second grouping comprises element representations of elements in the transition metals groups, a third grouping comprises element representations of elements in the metalloids, halogens, and Noble gases groups, and a fourth grouping comprises element representations of elements in the Lanthanides and the Actinides groups.

12. The periodic representation of the chemical elements of claim 9, wherein said element representations are arranged on each of the groupings such that said element representations form a plurality of periodic rows when the groupings are viewed together.

13. A kit for assembling a three-dimensional periodic representation of the chemical elements, comprising:

a plurality of sheets;

a plurality of element representations printed on each of said sheets in one or more groupings;

a plurality of tabs in communication with each of the groupings; and

a set of instructions for cutting out the groupings from said sheets and assembling the groupings into a plurality of three-dimensional forms.

14. The kit of claim 13, further comprising a map sheet having graphics that indicate the placement of the three-dimensional forms.

15. The kit of claim 14, wherein said element representations are arranged in each of said groupings such that said element representations form periods when the three-dimensional forms are viewed together in a particular order.

16. The kit of claim 15, wherein said map sheet includes pathways that aide in the viewing of the periods formed by the arrangement of said element representations.

17. The kit of claim 13, wherein said set of instructions includes a plurality of diagrams that depict the three-dimensional forms in various stages of assembly.

18. The kit of claim 13, wherein said set of instructions comprises a plurality of questions about the elements.

19. A method of teaching a student about the chemical elements, comprising the steps of:

a) obtaining a plurality of sheets, each of said sheets having a plurality of element representations printed thereon in one or more groupings and a plurality of tabs in communication with each of the groupings; and

b) providing a set of instructions for creating a plurality of three-dimensional forms from said sheets.

20. The method of teaching a student about the chemical elements of claim 19, further comprising the step of cutting out the groupings from said sheets according to said instructions.

21. The method of teaching a student about the chemical elements of claim 19, further comprising the step of assembling the groupings into the three-dimensional forms.

22. The method of teaching a student about the chemical elements of claim 21, further comprising the step of observing the element representations of common and uncommon elements as well as the groupings of element representations, which display information about elements having similar properties.

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