Logical chemical puzzle #8

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(A book prize will go to the winner drawn from submissions received by July 15, 2006. Send your solution to CHEM 13 NEWS, Logical chemical puzzle #8, Chemistry Department, University of Waterloo, Waterloo ON N2L 3G1, fax 519-888-9168, E-mail kjackson@uwaterloo.ca.)

To make a Science Fair exhibit honouring a very famous chemist who worked in the 18th century, a bright student is trying to find samples of nine different elements, nine inorganic compounds and nine organic compounds, each set of nine having names that start with one of the letters that form the famous chemist's last name. After a huge effort, and with the assistance of many friends, the student manages to gather together the desired nine groups of three substances each. In each group the three names start with one of the required letters. In this puzzle your task is to deduce which substances are in each group and find the last name of the famous chemist (see the table below). To assist you in this mission here are some clues.

1. By far the most difficult elements to find were a lanthanide named for the continent where this famous chemist was born, and a different element that was discovered in 1803 by Dr. William Hyde Wollaston, who named it by the rose colour of its salts.
2. On the other hand it was easy to find common table salt, table sugar and ethanol, as well as three elements that were well known in ancient times. A used car battery was useful to get one of these latter elements.
3. There are three organic acids; one has the same number of carbon atoms as in isoprene, which is also one of the samples collected by the student. Another one of the acids is a dicarboxylic acid present in many foods and placed in the same group with a tetroxide that has a formula weight of 254.2 g/mol.
4. There are four oxides, one of which is very well known for its magnetic properties.
5. There are three chlorides and an hydroxide used in antacids. One of the chlorides is of the lanthanide mentioned above and it is in a group displayed next to resorcinol, an organic compound with medical applications.
6. There is only one halogen and it is in the same group with an alcohol that has a formula weight of 60.1 g/mol, and with an indium compound.
7. Water electrolysis was used to obtain the only gaseous element at room temperature used by the student.
8. Three compounds contain alkali metals; of these, the carbonate has a formula weight of 230.95 g/mol.
9. A piece of an anodized element and 25 mL of a common ketone are displayed together and close to a pentoxide and a compound that contains 12 carbon atoms.
10. If you add all the atomic numbers of the elements used by the student you get 329.

Surname letters									
Elements									
Inorganic compounds									
Organic compounds									

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Currie wins January crostic prize

John Currie, a teacher at Robert A. McMath Secondary School, Richmond BC, wins the book prize for January's crostic. The quotation is taken from *The Climates of Canada,* by David Phillips.

> *Weather can be a benevolent resource, a terrifying hazard, a challenge, a threat, a pleasure or a disappointment. In an average year Canadians will probably experience it in all these guises. Most of us, in fact, will look back with pleasure and even pride at some of the more bizarre weather we have endured although our responses at the time may not have been so enthusiastic.*

The clue answers are:

A, ductility
B, aufbau
C, VSEPR
D, intermediate
E, diffraction
F, pattern
G, hubbub
H, ionization
I, leave it at that
J, linkage
K, isomerism
L, polarize
M, Sweetwater
N, the honey
O, hexagonal close packing
P, europium
Q, cheesepress
R, leechee
S, in a sheepwash
T, messenger RNA
U, a rain shower
V, taramasalata
W, enthalpy
X, standard
Y, overvalue
Z, freshener
AA, covalent bond
BB, a lab art
CC, nonelectrolyte
DD, awhere
EE, De Broglie
FF, a new house ■