# *ChemMatters* Puzzle: Su-Chem-Du

 Here’s a variation of a SUDOKU puzzle that needs some chemical knowledge as well as logic to solve.

1. Instead of numbers, we’re using nine letters in the grid: alphabetically they are C D E I N O R T and U.

 Note that five of those letters are one-letter symbols of an element, namely C,I,N,O, and U,.

2. The more letters in the grid at the start, the easier its solution. We’re providing several of the letters

 directly and 14 more can come from clues below. Any box in the grid with a number has as its letter one

 of our five elements. The clue should help you zero in on the proper one.

3. Once you’ve answered as many clues as you can, proceed to solve the Sudoku grid. Remember that any

 given letter must appear exactly ONCE in each row, column, and 3x3 square.

 At any time you can go back to identify any remaining clues.

4. When finished, the letters in the top row complete this phrase: “In REDOX, the gaining of electrons is…”

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | D | U | 5 | T |  | 1 | 2 |
|   | N | O |  |  | I |  | C | U |
|  8 | C | 9 | N | O |  | E |  | T |
|   | R | I | 10 | 4 |  |  |  | O |
|   | U | E | T | N |  | C | 3 |  |
|  O |  | C |  | 13 |  | U | N |  |
| U | 11 | T |  | D | C | 7 |  |  |
|   | D |  | I |  | 12 | O | 14 | E |
|   | I | N | 6 |  | U |  |  | C |

THE CLUES

1. Makes up about 36% by weight in laughing gas.
2. Makes up about 64% by weight in laughing gas.
3. A commercial source of this element is kelp in sea water.
4. Its 235 isotope is fissionable.
5. The key element in organic chemistry.
6. DNA has less of it than comparable RNA does.
7. In organic chemistry “amine” denotes the presence of this element, along with hydrogen.
8. Its 131 isotope is sometimes used in thyroid medical treatments.
9. The heaviest of the naturally occurring elements.
10. Its four outermost half-filled sp3 orbitals can fuse with like atoms to form a DIAMOND crystal.
11. It has the next-to- highest electronegativity of all the elements.
12. Of all the atoms in Earth’s atmosphere, about 4/5th of themare of this element.
13. It dissolves in non-polar solvents, making a beautiful violet color.
14. Alpha decay of its most common isotope produces Th-234.