Name: _____ *Chem 121/ Dr. Rusay*

Adapted from:
Welsh, Michael J., *J. Chem. Educ.* 2007, **84**, 610.

" The precursor of the sudoku puzzle was first published in the United States in 1979 by Howard Garns, a retired architect and freelance puzzle constructor. In April 1984, the puzzle was introduced in Japan and the name "sudoku" was assigned to the puzzle. "Suuji wa dokushin ni kagiru" may be translated as "the numbers must be single" or "the numbers must occur only once". Later the name was abbreviated to sudoku (pronounced SUE-dough-coo; "su" means number, "doku" means single). In April 2005, The *New York Post* published sudoko puzzles as a regular feature and by July 2005, the puzzle surged in popularity all over the country *(1, 2).* "

Complete the transition metal sudoku by providing the respective, correct nine chemical symbols of the metals in the blank spaces. The back is a more challenging version.

Co		Fe		Zn			V	Cu
						Co	Mn	
Ti						Zn		
Cu				Cr	Ni			
	Cr		Ti	V	Mn		Cu	
			Cu	Fe				Mn
		Ni						Ti
	Cu	Ti						
Zn	V			Ti		Fe		Cr

Cobalt		[Ar] $4s^2 3d^6$		Zn			V	+2 ion is blue
						Co	Possible # of ions = 6	
Ti						colorless ion		
[Ar] $4s^1 3d^{10}$				Cr	Ni			
	+6 ion = [Ar]		Ti	V	Mn		*Ions:* +1 or +2	
			Cu	Fe				Mn
		Nickel						m.p. = 1660 °C
	Cu	d = 4.51 g/cm^3						
forms +2 ion only	Vanadium			Titanium		Fe		[Ar] $4s^1 3d^5$