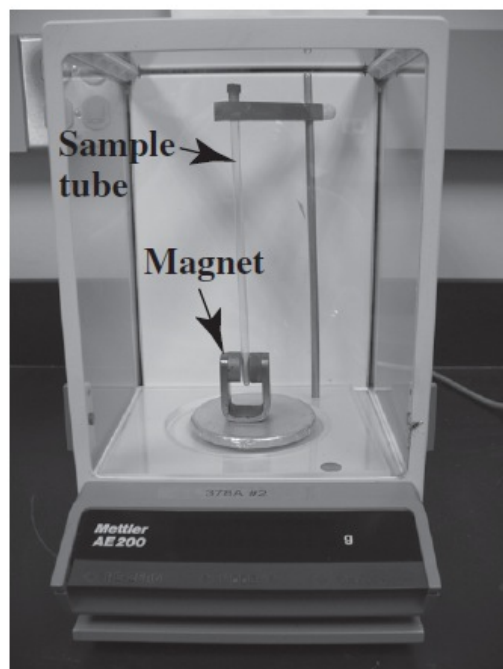




**TABLE 10.4 Character Table for  $O_h$** 

$O_h$	$E$	$8C_3$	$6C_2$	$6C_4$	$3C_2(=C_4^2)$	$i$	$6S_4$	$8S_6$	$3\sigma_h$	$6\sigma_d$		
$A_{1g}$	1	1	1	1	1	1	1	1	1	1		
$A_{2g}$	1	1	-1	-1	1	1	-1	1	1	-1		
$E_g$	2	-1	0	0	2	2	0	-1	2	0		$(2z^2 - x^2 - y^2, x^2 - y^2)$
$T_{1g}$	3	0	-1	1	-1	3	1	0	-1	-1	$(R_x, R_y, R_z)$	
$T_{2g}$	3	0	1	-1	-1	3	-1	0	-1	1		$(xy, xz, yz)$
$A_{1u}$	1	1	1	1	1	-1	-1	-1	-1	-1		
$A_{2u}$	1	1	-1	-1	1	-1	1	-1	-1	1		
$E_u$	2	-1	0	0	2	-2	0	1	-2	0		
$T_{1u}$	3	0	-1	1	-1	-3	-1	0	1	1	$(x, y, z)$	
$T_{2u}$	3	0	1	-1	-1	-3	1	0	1	-1		



Ion	$S$	$\mu_S$	Observed
$V^{4+}$	$\frac{1}{2}$	1.73	1.7–1.8
$Cu^{2+}$	$\frac{1}{2}$	1.73	1.7–2.2
$V^{3+}$	1	2.83	2.6–2.8
$Ni^{2+}$	1	2.83	2.8–4.0
$Cr^{3+}$	$\frac{3}{2}$	3.87	~3.8
$Co^{2+}$	$\frac{3}{2}$	3.87	4.1–5.2
$Fe^{2+}$	2	4.90	5.1–5.5
$Co^{3+}$	2	4.90	~5.4
$Mn^{2+}$	$\frac{5}{2}$	5.92	~5.9
$Fe^{3+}$	$\frac{5}{2}$	5.92	~5.9

$T_d$ ( $\bar{4}3m$ )	$E$	$8C_3$	$3C_2$	$6S_4$	$6\sigma_d$	
$A_1$	1	1	1	1	1	$x^2 + y^2 + z^2$
$A_2$	1	1	1	-1	-1	
$E$	2	-1	2	0	0	$(2z^2 - x^2 - y^2, \sqrt{3}(x^2 - y^2))$
$T_1$	3	0	-1	1	-1	$(R_x, R_y, R_z)$
$T_2$	3	0	-1	-1	1	$(x, y, z)$ $(xy, xz, yz)$