	Mn <sup>3+</sup> MD Transition Rates 36 levels, 630 transitions		1.7 s <sup>-1</sup> @ 188.7 nm
	$\begin{array}{c} 3.4 \times 10^{-1}  s^{-1}  @  668.2  \text{nm} \\ \hline 3.4 \times 10^{-1}  s^{-1}  @  484.4  \text{nm} \\ \hline 3.4 \times 10^{-1}  s^{-1}  @  474.4  \text{nm} \\ \hline \end{array}$		1.75 - @ 188.711113
	4.0 × 10 <sup>-1</sup> s <sup>-1</sup> @ 452.6 nm)  3.2 × 10 <sup>-1</sup> s	$2.6 \times 10^{-1}  s^{-1}  @  191.9  \text{nm}$ $2.6 \times 10^{-1}  s^{-1}  @  192.6  \text{nm}$	$2.4 \times 10^{-1} \text{ s}^{-1}$ @ 112.7 nm
	2.1 × 10 <sup>-1</sup> s <sup>-1</sup> @ 456.5 nm 2.0 × 10 <sup>-1</sup> s <sup>-1</sup> @ 305.6 nm 1.6 × 10 <sup>-1</sup> s <sup>-1</sup> @ 456.5 nm	1.5 × 10 <sup>-1</sup> s <sup>-1</sup> @ 273.6 nm	13
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		
	$\frac{1.3 \times 10^{-1}  s^{-1}  (s)}{1.2 \times 10^{-1}  s^{-1}  (e)}  295.1  \text{nm}}$		13
	$\begin{array}{c} 1.1\times 10^{-1}s^{-1} @ 296.0 \text{ nm} \\ \hline 1.1\times 10^{-1}s^{-1} @ 576.6 \text{ nm} \\ \hline 1.1\times 10^{-1}s^{-1} @ \\ \hline 1.1\times 10^{-1}s^{-1} & \\ \hline \end{array}$	$1.1 \times 10^{-1}  s^{-1}  @  251.8  \text{nm}$ 3.452.7  nm	
	$1.0 \times 10^{-1}  s^{-1}  @  297.0  \text{nm}$ $9.9 \times 10^{-2}  s^{-1}  @  447.5  \text{nm}$ $9.8 \times 10^{-2}  s^{-1}$ $9.8 \times 10^{-2}  s^{-1}$ $9.8 \times 10^{-2}  s^{-1}  @  476.4  \text{nm}$		13
	$9.7 \times 10^{-2}  s^{-1}  @  443.3  \text{nm}$ $9.7 \times 10^{-2}  s^{-1}  @  443.3  \text{nm}$ $9.6 \times 10^{-2}  s^{-1}  @  443.3  \text{nm}$ $9.5 \times 10^{-2}  s^{-1}  @  443.3  \text{nm}$	1124.6 nm	
	$\begin{array}{c} 9.5 \times 10^{-2}  s^{-1}  @ \\ 9.2 \times 10^{-2}  s^{-1}  @ \\ 9.0 \times 10^{-2}  s \end{array}$	338.4 nm 5 <sup>-1</sup> @ 423.8 nm 3 454.4 nm	
	$8.6 \times 10^{-2}  s^{-1}  @ \\ 8.5 \times 10^{-2}  s^{-1}  @ \\ 8.5 \times 10^{-2}  s^{-1}  @ \\ 8.2 \times 10^{-2}  s^{-1}  & \\ 8.2 \times 10^{-2} $	-¹ @ 430.8 nm}	
	$7.8 \times 10^{-2}  s^{-1}  @  752.1  \text{nm}$ $7.3 \times 10^{-2}  s^{-1}  @  1191.6  \text{nm}$	7.3 × 10 <sup>-2</sup> s <sup>-1</sup> @ 334.3 nm	
	7.2 × 10 <sup>-2</sup> s <sup>-1</sup> @ 800.2 nm]  7.0 × 10 <sup>-2</sup> s <sup>-1</sup> @ 1027.0 nm]  6.9 × 10 <sup>-2</sup> s <sup>-1</sup> @ 470.5 nm  6.8 × 10 <sup>-2</sup> s <sup>-1</sup>		13
	$\begin{array}{c} 6.8 \times 10^{-2}  s^{-1} \\ \hline \\ 6.7 \times 10^{-2}  s^{-1}  @  467.5  \text{nm} \\ \hline \\ 6.6 \times 10^{-2}  s^{-1}  @ \\ \hline \\ 6.6 \times 10^{-2}  s^{-1}  @ \\ \hline \\ 6.4 \times 10^{-2}  s^{-1}  & \\ \hline \end{array}$	304.5 nm}	
	5.3 × 10 <sup>-2</sup> s <sup>-1</sup> @ 1001.6 nm 5.2 × 10 <sup>-2</sup> s <sup>-1</sup> @ 299.5 nm	5.6 × 10 <sup>-2</sup> s <sup>-1</sup> @ 234.1 nm 5.2 × 10 <sup>-2</sup> s <sup>-1</sup> @ 339.4 nm	13
	$5.0 \times 10^{-2}  s^{-1}  @  439.3  \text{nm}$ $5.0 \times 10^{-2}  s^{-1}  @  439.3  \text{nm}$ $4.8 \times 10^{-2}  s^{-1}  @  445.1  \text{nm}$	1137.3 nm 4.9 × 10 <sup>-2</sup> s <sup>-1</sup> @ 192.2 nm	
	$4.4 \times 10^{-2}  s^{-1}  @  588.6  \text{nm}$ $4.4 \times 10^{-2}  s^{-1}  @  1625.2  \text{nm}$ $4.1 \times 10^{-2}  s^{-1}  @  1625.2  \text{nm}$ $4.0 \times 10^{-2}  s^{-1}  @  1625.2  \text{nm}$	623.6 nm	13
	$3.7 \times 10^{-2}  s^{-1}  @  541.5  \text{nm}$ $3.6 \times 10^{-2}  s^{-1}  @  445.1  \text{nm}$ $3.6 \times 10^{-2}  s^{-1}  @  1675.2  \text{nm}$		
2	$3.6 \times 10^{-2}  s^{-1}  @  756.4  \mathrm{nm}$ $3.5 \times 10^{-2}  s^{-1}  @  893.7  \mathrm{nm}$ $3.3 \times 10^{-2}  s^{-1}  @  455.2  \mathrm{nm}$ $3.2 \times 10^{-2}  s^{-1}  @  887.8  \mathrm{nm}$	3.4 × 10 <sup>-2</sup> s <sup>-1</sup> @ 334.3 nm	
	$3.0 \times 10^{-2}  s^{-1}  @  1761.1  \text{nm}$ $2.9 \times 10^{-2}  s^{-1}  @  1687.9  \text{nm}$ $2.9 \times 10^{-2}  s^{-1}  @  1767.7  \text{nm}$	2 180.9 nm	
	$2.9 \times 10^{-2}  s^{-1}  @  761.1  \text{nm}$ $2.8 \times 10^{-2}  s^{-1}  @  302.2  \text{nm}$ $2.8 \times 10^{-2}  s^{-1}  @  301.5  \text{nm}$ $2.6 \times 10^{-2}  s^{-1}  @  1689.0  \text{nm}$	$2.7 \times 10^{-2}  s^{-1}  \text{@ 158.0 nm}$	
	$\begin{array}{c} 2.6 \times 10^{-2}  s^{-1}  @ \\ \hline 2.2 \times 10^{-2}  s^{-1}  @ \\ \hline 2.1 \times 10^{-2}  s^{-1}  @  449.3  \text{nm} \end{array}$	2.5 × 10 <sup>-2</sup> s <sup>-1</sup> @ 1428.0 nm	
	2.1 × 10 <sup>-2</sup> s <sup>-1</sup> @ 302.2 nm 2.1 × 10 <sup>-2</sup> s <sup>-1</sup> @ 449.3 nm 2.1 × 10 <sup>-2</sup> s <sup>-1</sup> @ 446.2 nm 2.0 × 10 <sup>-2</sup> s <sup>-1</sup> @ 3583.6 nm		
	$2.0 \times 10^{-2}  s^{-1}  @  3160.9  \text{nm}$ $1.9 \times 10^{-2}  s^{-1}  @  8889.8  \text{nm}$ $1.9 \times 10^{-2}  s^{-1}  @  879.3  \text{nm}$		13
	$\begin{array}{c} 1.9 \times 10^{-2} \ s^{-1} \ \odot \\ \\ 1.7 \times 10^{-2} \ s^{-1} \ \odot \\ \\ 1.7 \times 10^{-2} \ s^{-1} \ \odot \\ \\ \end{array}$	302.8 nm 0 179.9 nm 1.6 × 10 <sup>-2</sup> s <sup>-1</sup> @ 348.4 nm	
2		1.4 × 10 <sup>-2</sup> s <sup>-1</sup> @ 1448.6 nm 2409.1 nm	13
	$\begin{array}{c} 1.1 \times 10^{-2}  s^{-1}  @ \\ \hline 1.1 \times 10^{-2}  s^{-1}  @ \\ \hline 1.1 \times 10^{-2}  s^{-1} \\ \hline 9.9 \times 10^{-3}  s^{-1}  @  3474.8  nm \end{array}$		
	$\begin{array}{c} 9.5 \times 10^{-3}  s^{-1}  @ \\ \hline \\ 9.3 \times 10^{-3}  s^{-1}  @ \\ \hline \\ 9.0 \times 10^{-3}  s^{-1}  @ \\ \hline \\ 9.0 \times 10^{-3}  s^{-1}  \\ \hline \end{array}$	0 179.3 nm 0 332.8 nm 0 286.1 nm	13
	$7.9 \times 10^{-3}  s^{-1}  @  1958.7  \text{nm}$ $7.3 \times 10^{-3}  s^{-1}  @  1645.3  \text{nm}$ $7.2 \times 10^{-3}  s^{-1}  @$	-1 @ 289.1 nm}	
	$6.9 \times 10^{-3}  s^{-1}  @  916.5  \text{nm} \}$ $6.6 \times 10^{-3}  s^{-1}  @  3474.8  \text{nm} \}$ $6.4 \times 10^{-3}  s^{-1}  @  418.0  \text{nm} \}$	7.1 × 10 <sup>-3</sup> s <sup>-1</sup> @ 155.2 nm	13
	$\begin{array}{c} 3.4 \times 10^{-3} \text{ s}^{-1} \text{ @} \\ 6.2 \times 10^{-3} \text{ s}^{-1} \text{ @} \\ 5.9 \times 10^{-3} \text{ s}^{-1} \\ \hline \\ 5.3 \times 10^{-3} \text{ s}^{-1} \text{ @} 941.1 \text{ nm} \end{array}$		
	$4.7 \times 10^{-3}  s^{-1}  @  15610.0  \text{nm}$ $4.7 \times 10^{-3}  s^{-1}  @  930.3  \text{nm}$ $4.6 \times 10^{-3}  s^{-1}  @  916.5  \text{nm}$ $4.2 \times 10^{-3}  s^{-1}  @  449.3  \text{nm}$ $4.0 \times 10^{-3}  s^{-1}  @  449.3  \text{nm}$	8 9 10 11 35	13
	$3.8 \times 10^{-3}  s^{-1}  @  907.5  \text{nm}$ $3.4 \times 10^{-3}  s^{-1}  @  3344.8  \text{nm}$	3.4 × 10 <sup>-3</sup> s <sup>-1</sup> @ 159.1 nm	
	$3.1 \times 10^{-3}  s^{-1}  @  397.8  \text{nm}$ $3.0 \times 10^{-3}  s$ $2.9 \times 10^{-3}  s^{-1}  @$ $2.7 \times 10^{-3}  s^{-1}  @$		
	$\begin{array}{c} 2.3 \times 10^{-3}  s^{-1}  @  397.8  \text{nm} \\ \\ 2.3 \times 10^{-3}  s^{-1}  @  393.2  \text{nm} \\ \\ \end{array}$	;=1 @ 277.1 nm	13
	$2.0 \times 10^{-3}  s^{-1}$ @ $1873.3  \text{nm}$ $1.8 \times 10^{-3}  s^{-1}$ @ $415.9  \text{nm}$ $1.5 \times 10^{-3}  s^{-1}$ @ $393.7  \text{nm}$	1.7 × 10 <sup>-3</sup> s <sup>-1</sup> @ 158.9 nm	
1.2 × 10 <sup>-3</sup> s <sup>-1</sup> @ 33680.2 nm		$1.3 \times 10^{-3}  s^{-1}  @  217.6  \text{nm}$	
1.2 × 10 <sup>-3</sup> s <sup>-1</sup> @ 33681.1 nm	$1.2 \times 10^{-3}  s^{-1}$ @ 371.6 nm $1.1 \times 10^{-3}  s^{-1}$ @ 393.7 nm $3.1 \times 10^{-3}  s^{-1}$	$1.2 \times 10^{-3}  s^{-1}  @  257.7  \text{nm}$ $1.1 \times 10^{-3}  s^{-1}  @  158.9  \text{nm}$	
2	$1.0 \times 10^{-3}  s^{-1}  @  252.9  \text{nm}$ $1.0 \times 10^{-3}  s^{-1}  @  923.9  \text{nm}$ $1.0 \times 10^{-3}  s^{-1}  @  1625.1  \text{nm}$ $9.4 \times 10^{-4}  s^{-1}$	-1 @ 428.8 nm	13
8.2 × 10 <sup>-4</sup> s <sup>-1</sup> @ 26582.5 nm	9.2 × 10 <sup>-4</sup> s <sup>-1</sup> @ 3488.3 nm 7.9 × 10 <sup>-4</sup> s <sup>-1</sup> @ 403.9 nm 7.8 × 10 <sup>-4</sup> s <sup>-1</sup> @ 297.8 nm	$7.4 \times 10^{-4}  s^{-1}  $ @ 633.1 nm	
$6.2 \times 10^{-4}  s^{-1}  @  26581.9  \text{nm}$	$7.4 \times 10^{-4}  s^{-1}  @  251.6  \text{nm}$ $6.1 \times 10^{-4}  s^{-1}  @  3622.0  \text{nm}$	6.3 × 10 <sup>-4</sup> s <sup>-1</sup> @ 343.7 nm	13
5.0 × 10 <sup>-4</sup> s <sup>-1</sup> @ 48414.3 nm	3.6 × 10 <sup>-4</sup> s <sup>-1</sup> @ 3748.9 nm 3.4 × 10 <sup>-4</sup> s <sup>-1</sup>	3.6 × 10 <sup>-4</sup> s <sup>-1</sup> @ 161.8 nm @ 299.5 nm	
	$3.3 \times 10^{-4}  s^{-1}  @  40587.9  \text{nm}$ $3.2 \times 10^{-4}  s^{-1}  @  523.5  \text{nm}$ $3.2 \times 10^{-4}  s^{-1}  @  43698.0  \text{nm}$ $3.2 \times 10^{-4}  s^{-1}  @  43698.0  \text{nm}$	8 9 10 11 12	13
	2.6 × 10 <sup>-4</sup> s <sup>-1</sup> @ 42984.4 nm 2.3 × 10 <sup>-4</sup> s <sup>-1</sup> @ 3274.4 nm 2.1 × 10 <sup>-4</sup> s <sup>-1</sup>	-¹ @ 280.0 nm}	2.1 × 10 <sup>-4</sup> s <sup>-1</sup> @ 90.9 nm
	$2.1 \times 10^{-4}  s^{-1}  @  1756.9  \text{nm}$ $2.0 \times 10^{-4}  s^{-1}  @  325.3  \text{nm}$ $1.9 \times 10^{-4}  s^{-1}  @  395.9  \text{nm}$ $1.5 \times 10^{-4}  s^{-1}  @  325.3  \text{nm}$	2.0×10 <sup>-4</sup> s <sup>-1</sup> @ 318.0 nm	
	$\begin{array}{c} 1.3 \times 10^{-4}  s^{-1}  \odot \\ \hline 1.2 \times 10^{-4}  s^{-1}  \odot \\ \hline 1.2 \times 10^{-4}  s^{-1}  \odot \\ \hline 1.1 \times 10^{-4}  s^{-1}  \odot \\ \hline \end{array}$	@ 178.5 nm }  -1 @ 292.1 nm }  280.1 nm }	
	$\begin{array}{c} 3.8 \times 10^{-5}  s^{-1}  @ \\ \hline & & & & & \\ \hline & & & & \\ \hline & & & & \\ \hline & & & &$	-1 @ 292.1 nm}	
6.5 × 10 <sup>-5</sup> s <sup>-1</sup> @ 94055.4 nm	$\begin{array}{c} 5.6 \times 10^{-5}  s^{-1}  @  807.2  \text{nm} \\ \hline \\ 5.6 \times 10^{-5}  s^{-1}  @  807.2  \text{nm} \\ \hline \end{array}$	302.8 nm	
		452.2 nm	
1	$4.5 \times 10^{-5}  s^{-1}$ @ 922.8 nm] $4.1 \times 10^{-5}  s^{-1}$ @ $4.1 \times 10^{-5}  s^{-1}$ @ $3.8 \times 10^{-5}  s^{-1}$ @ $81290.5  \text{nm}$	3.8 × 10 <sup>-5</sup> s <sup>-1</sup> @ 160.8 nm	13
	$3.6 \times 10^{-5}  s^{-1}  \odot$ $3.1 \times 10^{-5}  s^{-1}$ $3.1 \times 10^{-5}  s^{-1}$	@ 295.6 nm}  = 2.9 × 10 <sup>-5</sup> s <sup>-1</sup> @ 160.8 nm}	
1	$2.7 \times 10^{-5}  s^{-1}$ @ 638.9 nm] $2.6 \times 10^{-5}  s^{-1}$ @ 513.4 nm]	2.6×10 <sup>-5</sup> s <sup>-1</sup> @ 116.7 nm	13
	- {2.2 × 10 <sup>-5</sup> s <sup>-1</sup> @ 2463.5 nm}		
	$\begin{array}{c} 2.0 \times 10^{-5}  s^{-1} \\ \hline 1.9 \times 10^{-5}  s^{-1} \oplus 469.8  \text{nm} \\ \hline \\ 1.6 \times 10^{-5}  s^{-1} \oplus 214.2  \text{nm} \\ \hline \\ 1.3 \times 10^{-5}  s^{-1} \end{array}$		