

Aspects o	of Solid Surfaces
<u>Surface Properties</u> Structure Bonding properties Dynamics of surface processes	Chemical composition Kinetics (adsorption, diffusion, desorption)
Applications • Semiconductor devices • Catalysis • Friction and lubrication (tribology) • Sensors • Electrochemistry	$\frac{Probing Surface Properties}{atoms, molecules}$ $\frac{atoms, molecules}{hv} \in Field$ $hv = e^{-ions} + heat$ $hv = e^{-ions} + hv$
Course will primarily focus on: at chemical composition and adsorption But Many important aspects of s	tomic structure and electronic properties, on properties of surfaces surface properties can be understood from
the point of view of macroscopic the conditions (e.g., faceting, wetting, is	ermodynamics; the surface under equilibrium sland growth)











































X-ray and spectroscopic notations										
			Quantum numbers			X-ray suffix	X-ray level	Spectroscopic Level		
Principle quantum number: $_$ n = 1, 2, 3, Orbital quantum number: l = 0, 1, 2,, (n-1)			п	l	j					
			1	0	1/2	1	к	1s _{1/2}		
			2	0	1/2	1	L ₁	2s _{1/2}		
			2	1	1/2	2	L ₂	2p _{1/2}		
			2	1	3/2	3	L ₃	2p _{3/2}		
Spin quantum number.		3	0	1/2	1	M ₁	3s _{1/2}			
$s = \pm \frac{1}{2}$			3	1	1/2	2	M ₂	3p _{1/2}		
Total angular momentum: $j = l + s = \frac{1}{2}, \frac{3}{2}, \frac{5}{2}$		3	1	3/2	3	M ₃	3p _{3/2}			
		3	2	3/2	4	M ₄	3d _{3/2}			
		3	2	5/2	5	M ₅	3d _{5/2}			
Spin-orbit split doublets		Etc.			Etc.	Etc.	Etc.			
Subshell	<i>j</i> values	Area ratio	-							
S	1/2	-	-							
p	1⁄2; 3/2	1: 2								
d	3/2; 5/2	2: 3								
f	5/2; 7/2	3: 4	ecture 13 24							















