Group IV Elements – Summary		
Stability of oxides	Descending the group IV:	
	 The +2 oxidation state becomes more stable 	
	The +4 oxidation	n state becomes less stable
Tetrachloride		1
	Formula	XCl ₄
	Structure	Molecular structure
		 All XCl₄ molecules held together in liquid state by
		weak Van der Waal's forces
		Low boiling points and liquid at room conditions
	Boiling points	 Increases down the group
		Molecules get larger, electron cloud is relatively
		easier to distort
		Stronger Van der Waal's forces
		 More energy required to overcome this force in order to boil
	Shape	Tetrahedral shape with bond angle of 109.5°
	Thermal stabilities	Down the group:
		Thermal stabilities decrease
		 Covalent bond becomes we ke a the atoms get
		larger
		Inert part there makes the +IV oxidation less stable
	fru fru	- CCM st b o heat
	view .	C PbC is a vellow liquid which slowly decomposes at
Dre	P	room temperature to lead (II) chloride and chlorine
L 1		gas
		$PbCl_4 \rightarrow PbCl_2 + Cl_2$
		Yellow solid White solid
	Hydrolysis with	1. CCl ₄ does not react with water because a water
	water	molecule cannot form dative bond with the carbon
		atom as it does not have any vacant 3d orbitals.
		2. $SiCl_4 + 2H_2O \rightarrow Si(OH)_4 + 4HCI$
		3. $GeCl_4 + 2H_2O \rightarrow GeO_2 + 4HCl$
		4. $SnCl_4 + 4H_2O \rightarrow Sn(OH)_4 + 4HCl_5$
		5. $PDCI_4 + 4H_2U - PD(UH)_4 + 4HCI$