Part	PIXL ners in excellence									•	\downarrow		Very ha	rd.	R	gid structure.	PiXL	
	Very large molecules	Solids (H H ——	→ (H H) 		Each carbon atom is bonded to four others					Very high melting point.		Strong covalent bonds.			
	inolecules	temperat	ture bond	s. H H		\ H H / _n							Does not conduct electricity.		No del	ocalised electrons.		
Usually gases or liquids	Spin Covale	ent bonds	Low melting and boiling points.	Due to having weak intermolecular forces that easily broken.		Properties	Polyme	ers Diamon		nd	Giant covalent structures		Diamond, aphite, silicon dioxide		h melting ints	Lots of energy neede strong, covalent		
	forces mol	molecule rong but between ecules nolecular)	Do not conduct electricity.	mole having electri	Due to them molecules not naving an overall			BONDING, STRUCTO AND THE PROPERT OF MATTER 2						Н	N H	Dot and cross: + Show which atom electrons in the bo		
	are are	weak	Larger molecules have higher melting and boiling points.	forces in	molecular ncrease with ize of the lecules.	molecules	Si	ze of particles and operties (Chemist				of electrons	Can be small molecules	1 11-	_N_H	- All electrons are id 2D with bonds: + Show which atoms together		
Graphene			Excellent conductor.	Contains delocalise electrons	ed 📗 🖸	1 /		Between 1 a anometres size		1 nanome = 1 x 10 ⁻⁹ (0.000 000	metres 001m or a	pairs	e.g. ammo			- It shows the H-C-H bond incorrectly at 90°		
	grap	ingle layer of traphite one atom thick		strong	covalent S B			Use of	se of nanoparticles			Atoms share				3D ball and stick model: + Attempts to show the H-C bond angle is 109.5°		
Fullerenes	lerenes		Buckminsterful C ₆₀ First fullerene	shapes. Can a have rings of		oms v ilso five	Health cosmo sun cr catal deodo	etics, ream, lysts, Nanopart people. The second contents of the seco		oparticles may be toxic to ple. They may be able to nter the brain from the dstream and cause harm.			Can be gia covalent structure e.g. polymo	s		$ \begin{pmatrix} H & H \\ -C & -C \\ H & H \end{pmatrix}_{n} $	'H H	
	L. C.		discovere	d.	seven (heptagonal)										Graphi	te		
Carbon nanotubes	Sac			Very conductive.		Used in el	lectronics	ectronics Each o		*			SI	ippery.	Layers can slide other.	over each		
	nanotuk		Very thin and long	High t	High tensile strength.			orcing	rcing layers		al 🗸				igh melting point.	Strong covalen	t bonds.	
	Carbon	ALC:	cylindrical fullerenes	Large surface area to volume ratio.		io	composite materials. Catalysts and lubricants.		cov	valent bonds veen the layer	rs			Does conduct electricity.		Delocalised el between la		
								better	hope – k	orighter future	e							

Partners in	X L n excellence				İ			7			<u> </u>		Very har	d.		Rigid s	structure.	PIXUscience
	Solids (room tempera		_	re linked covalent	н ,c=c	— —	$ \begin{pmatrix} H & H \\ - C - C \end{pmatrix} $						Very high melting point.		. Stro	Strong covalent bonds.		
			-		н́ ì	H	\ H H / _n					•	Does not cor electricit		No delo		calised electrons.	
	Covalent bonds in the molecule are strong but forces between molecules (intermolecular) are weak		Low melting and boiling points.	inter forces	Due to having weak intermolecular forces that easily broken.		Polyn		AQA DING, STRUCT THE PROPER OF MATTER 2		Giant covalent structures				ery high melting Lo points		of energy needed	
			Do not conduct electricity.	mole having	Due to them molecules not having an overall electrical charge.		ВО	NDING, ID THE P						(F	HNH		Dot and cross : + Show which atom the electrons in the bonds of from	
			Larger molecule have higher melting and boiling points.	forces increa		ar with le	F F F F F F F F F F F F F F F F F F F	Size of par roperties	rticles an	d their	Covalent		Can be sma molecules		НН Н—_N—Н	2D w	Il electrons are ide vith bonds: ow which atoms a	
	Single layer of graphite one atom thick		Excellent conductor.	delocalis	Contains delocalised electrons. Contains strong covalent bonds.		Nanoparticles	nanometre	nometres (nm) in = 1 x 10 ⁻⁹ metres		(0.000 000 001m or a		e.g. ammo		Н	- It shows the H-C-H bon incorrectly at 90°		ond
			Very strong.	strong covalen			Nai				f a metre).					3D ball and stick model + Attempts to show the bond angle is 109.5°		
			Buckminsterfu C ₆₀ First fulleren	e to be	to be shapes. Can a have rings of		cos sun cat deoie	Ithcare, metics, cream, alysts, dorants, tronics.	people. Tenter t	icles may be toxic to They may be able to he brain from the am and cause harm.			Can be gian covalent structures e.g. polyme		•	(H-C-H	H ————————————————————————————————————	
			discover	ed.											Graphite *			
				Ver	Very conductive.			Used in electronics		carbon atom is nded to three							Layers can slide o	over each
			Very thin an long	High			Reiı	lustry. nforcing te materials	layers	ers forming s of hexagon ngs with no							Strong covalent	t bonds.
			cylindrica fullerenes	Large			Cata	Cotolysts and		ween the layers							Delocalised ele between lay	
								bette	er hope – b	righter futur	e							



