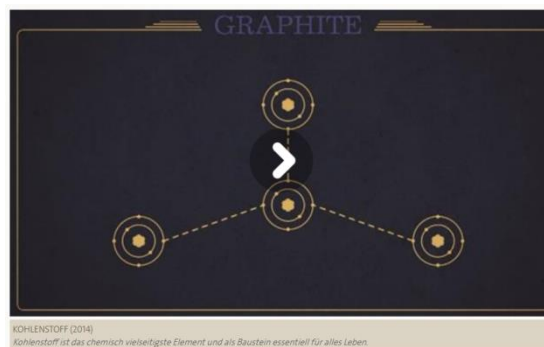


Carbon – the chemically most versatile element

Exercise 1) *(Individual work)*

Watch the video “Carbon (2014): Carbon is life's most essential building stock and the chemically most versatile element”. During the video, make notes on the **importance of carbon** for nature, man and industry.

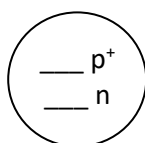


Positive aspects	Negative aspects

Exercise 2) *(Work in pairs)*

Work on the following tasks after watching the video:

- Draw the complete shell model of a carbon atom according to Bohr. The nucleus has already been drawn.



- b) Draw all the bonding possibilities that a carbon atom can form with two, three or four bonding partners (see example for oxygen). Bear in mind the octet rule!

	Oxygen	Carbon
One bonding partner	O =	/
Two bonding partners	— O —	<i>2 possibilities!</i>
Three bonding partners	/	
Four bonding partners	/	

How would you answer the lesson question following this task?

Why is carbon so special?

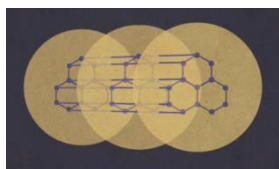
- c) Draw at least three structural formula for a molecule with the molecular formula C_5H_{10} .

How would you answer the lesson question following this task?

Why is carbon so special?

d) There are several allotropes of carbon. Match the names of the carbon allotropes with an image from the video and a description of their properties.

Allotropy: Manifestations of the same element in the same physical state, but with different structural formulas.



•

• **Graphene**

• **Insulating, very hard material**



•

• **Fullerene**

• **High electrical conductivity, soft material (lubricant)**



•

• **Diamond**

• **highly tensile**



•

• **Graphite**

• **chemically inert**

★ Elaboration possible:

How would you answer the lesson question following this task?

Why is carbon so special?