

# Interchange the Element in the 3D Model

**Spoken Tutorial Project**

**<https://spoken-tutorial.org>**

**National Mission on Education through ICT**

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# Learning Objectives



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**We will learn to,**



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**We will learn to,**

- ▶ **Change the element in the 3D model to create a different molecule**



# System Requirements



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- ▶ **Ubuntu Linux OS version 22.04**



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- ▶ **Jmol version 16.2.35**



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- ▶ **Jmol version 16.2.35**
- ▶ **Java version 11.0.25**



# Pre-requisites



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- ▶ **learner must be familiar with basic operations in Jmol interface**



# Pre-requisites

To follow this tutorial,

- ▶ learner must be familiar with basic operations in Jmol interface
- ▶ **Jmol Spoken Tutorials link:**  
<https://spoken-tutorial.org>



# Summary

- ▶ We have changed the element of the central atom in the 3D model to create a different molecule



# Assignment

**As an assignment:**

- ▶ **Create models of phosphine and hydrogen fluoride from model of methane**
- ▶ **Measure the bond angle**



# About the Spoken Tutorial Project

- ▶ Watch the video available at [https://spoken-tutorial.org/What\\_is\\_a\\_Spoken\\_Tutorial](https://spoken-tutorial.org/What_is_a_Spoken_Tutorial)
- ▶ It summarises the Spoken Tutorial project



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- ▶ It summarises the Spoken Tutorial project
- ▶ If you do not have good bandwidth, you can download and watch it



# Spoken Tutorial Workshops

## The Spoken Tutorial Project Team

- ▶ Conducts workshops using spoken tutorials
- ▶ Gives certificates to those who pass an online test
- ▶ For more details, please write to [contact@spoken-tutorial.org](mailto:contact@spoken-tutorial.org)



# Answers for THIS Spoken Tutorial

- ▶ **Questions in THIS Spoken Tutorial?**
- ▶ **Visit <https://forums.spoken-tutorial.org>**
- ▶ **Choose the minute and second where you have the question**
- ▶ **Explain your question briefly**
- ▶ **The Spoken Tutorial project will ensure an answer**

**You will have to register to ask questions**



# Acknowledgements

- ▶ **Spoken Tutorial project was established at IIT Bombay by the Ministry of Education (MoE), Govt. of India**

