

# Electronic Workbook of Organic Chemistry (*ELEBOC*)

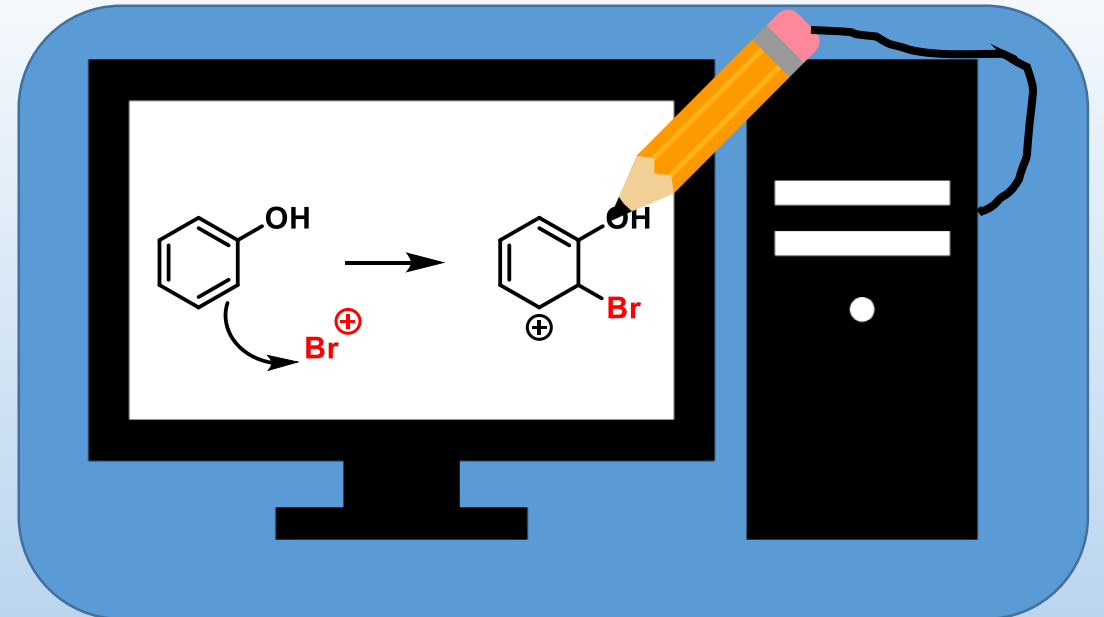
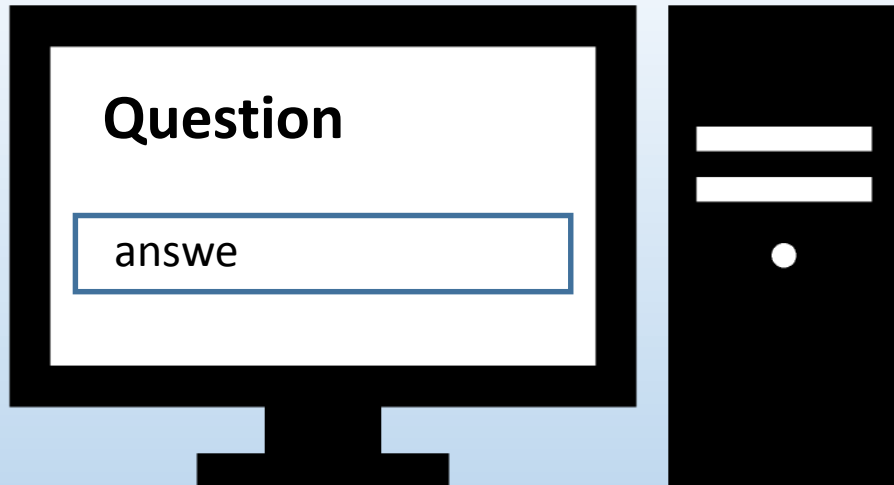
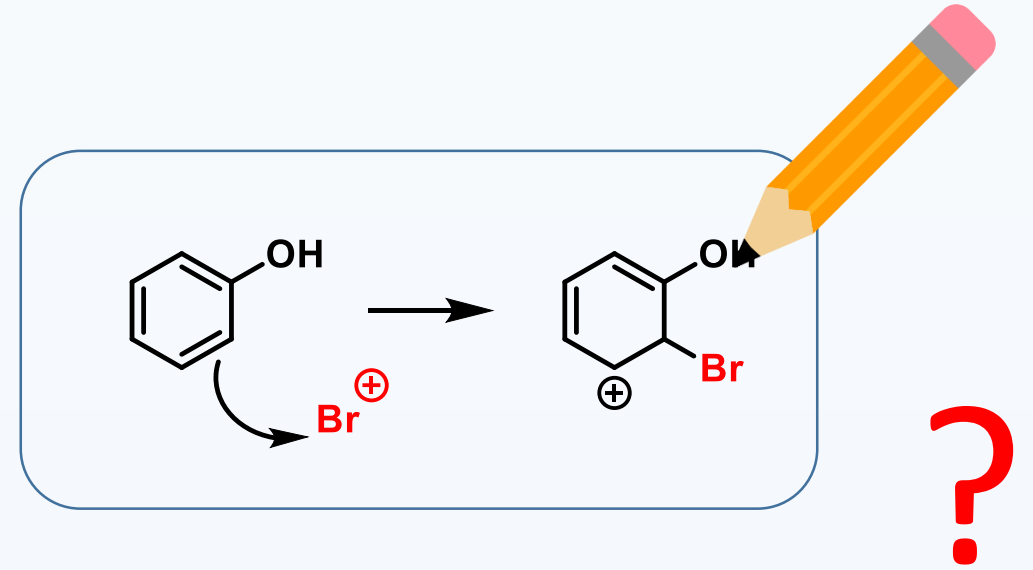
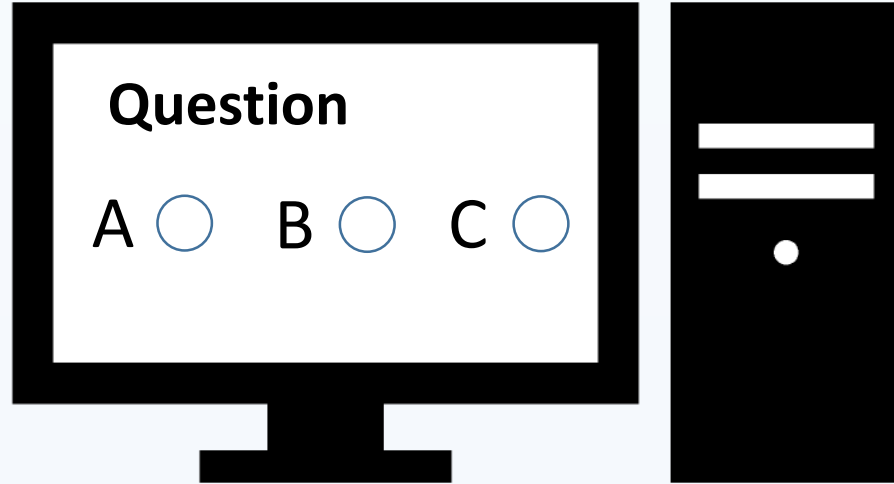


UNIVERSITY OF  
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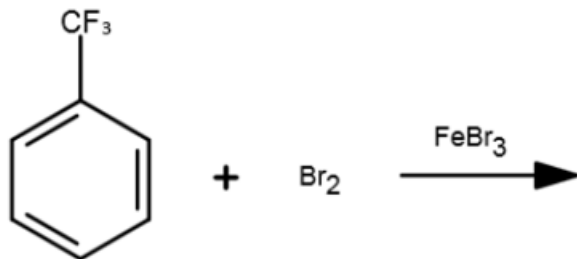
PROFFORMANCE – International Higher Education Teacher Award, Budapest 16. 6. 2022

# Introduction – use of computers for learning and practice



# Solution = electronic workbook of organic chemistry

Draw the product of the following reaction

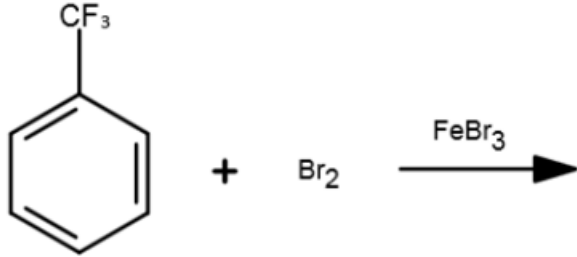


A screenshot of the Marvin JS editor interface. The interface includes a toolbar at the top with various drawing tools, a central workspace with the Marvin JS logo and 'by ChemAxon' text, and a vertical element palette on the right containing atoms H, C, N, O, S, F, P, Cl, Br, I, and \*. Below the workspace, there are buttons for 'Show hint', 'Show correct answer', and 'Check answer'.

**Answering by direct  
drawing a structure  
via Marvin JS editor,  
created by Chemaxon**

# Practical example

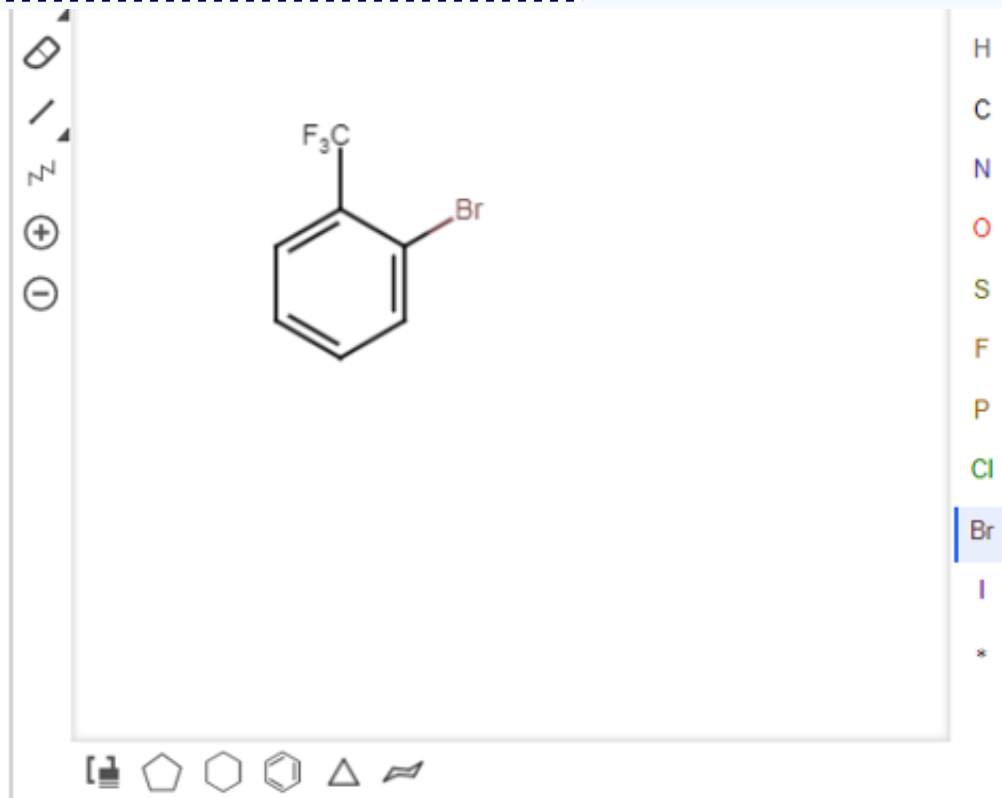
Draw the product of the following reaction



The drawing interface shows the product of the reaction: 3-bromo-1-(trifluoromethyl)benzene. The structure is a benzene ring with a  $\text{F}_3\text{C}$  group at the top position and a  $\text{Br}$  atom at the meta position (3-position). A pencil icon is positioned over the bromine atom. The interface includes a toolbar at the top with various drawing tools, a vertical element palette on the right with atoms H, C, N, O, S, F, P, Cl, Br, I, and \*, and a bottom control bar with buttons for 'Show hint', 'Show correct answer', and 'Check answer'.

„Check answer“

# Practical example



## HELP

„Aromatic electrophilic substitution. The regioselectivity is directed by the substituent present on the ring.“

Aromatic electrophilic substitution. The regioselectivity is directed by the substituent present on the aromatic ring.

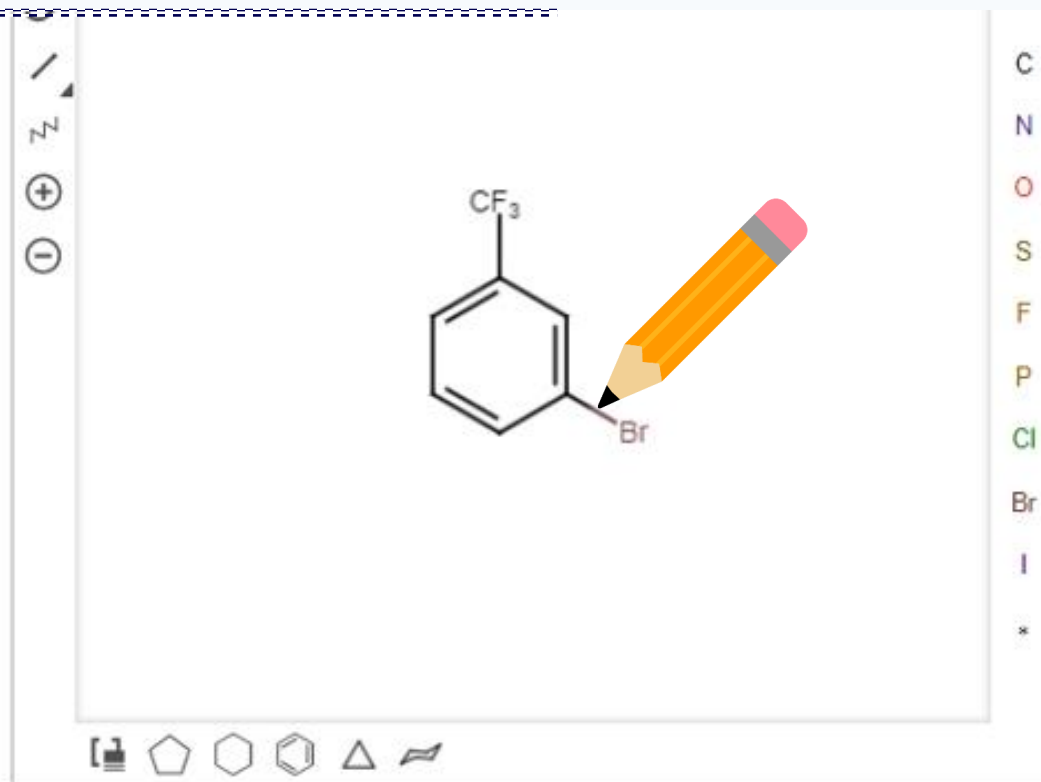
Wrong answer

„Wrong answer“

Show correct answer

Check answer

# Practical example



Aromatic electrophilic substitution. The regioselectivity is directed by the substituent present on the aromatic ring.

Correct answer ✓

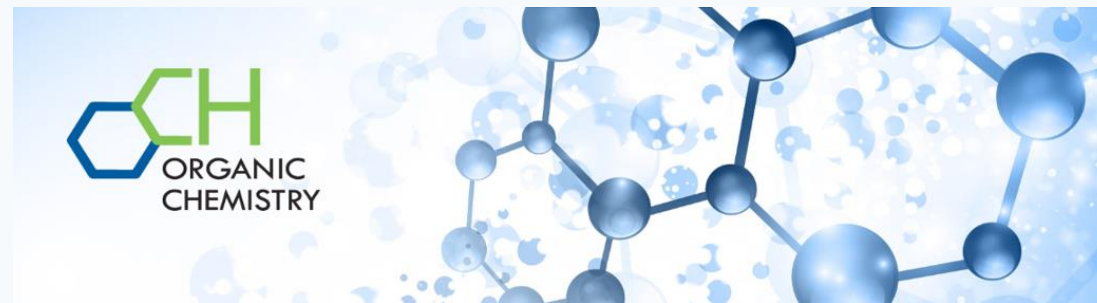
Show my answer

Check answer

Correct answer

# Modes and applications of ELEBOC

**Since 2018: 30000 users in total**  
**2500 users of English version**



## Modes of ELEBOC

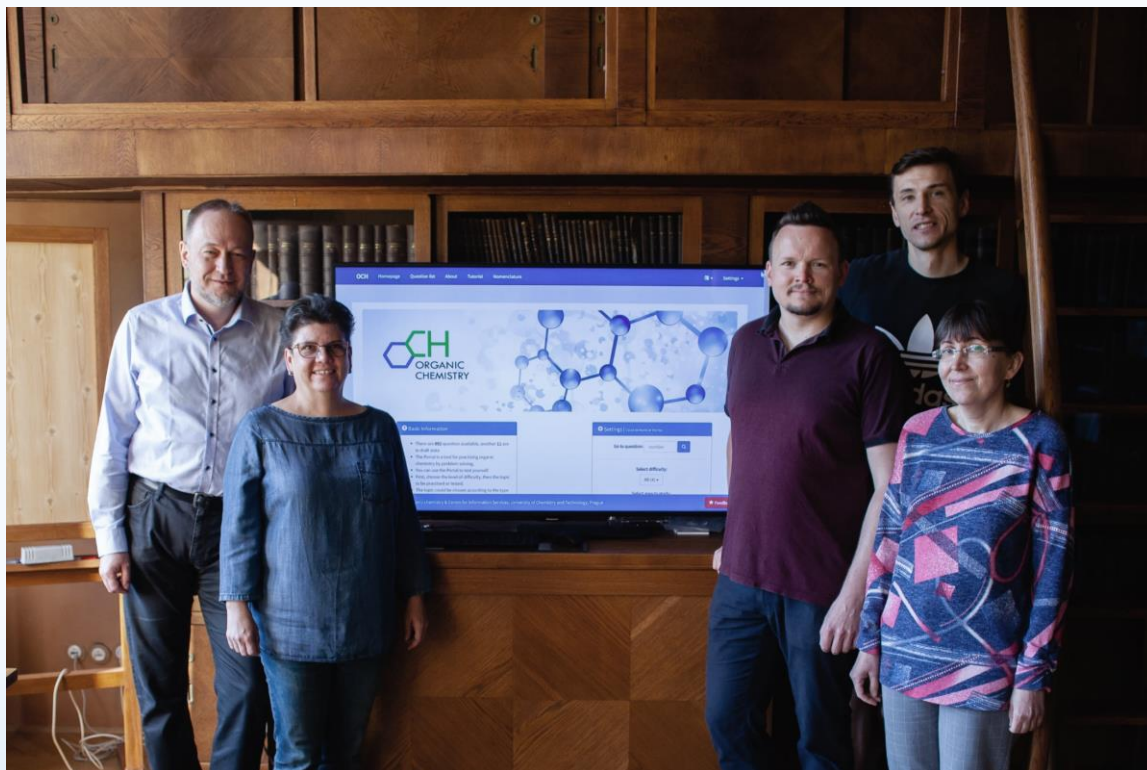
- Choice of difficulty
- Topic selection
- Learning/Examination
- On-line/pdf generation
- Select questions by numbers
- Czech/English version

## Application

- Interactive learning/practicing
- Teaching in Covid times
- Entrance examination
- Question libraries building
- Custom exercise book
- Universities/High schools



# Acknowledgement



<https://och.vscht.cz/>

Bedřich Košata – idea

Dana Husníková – design

Michal Obergruber – programming

PhD and master students for testing



**Marvin JS**

<https://chemaxon.com/>



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