

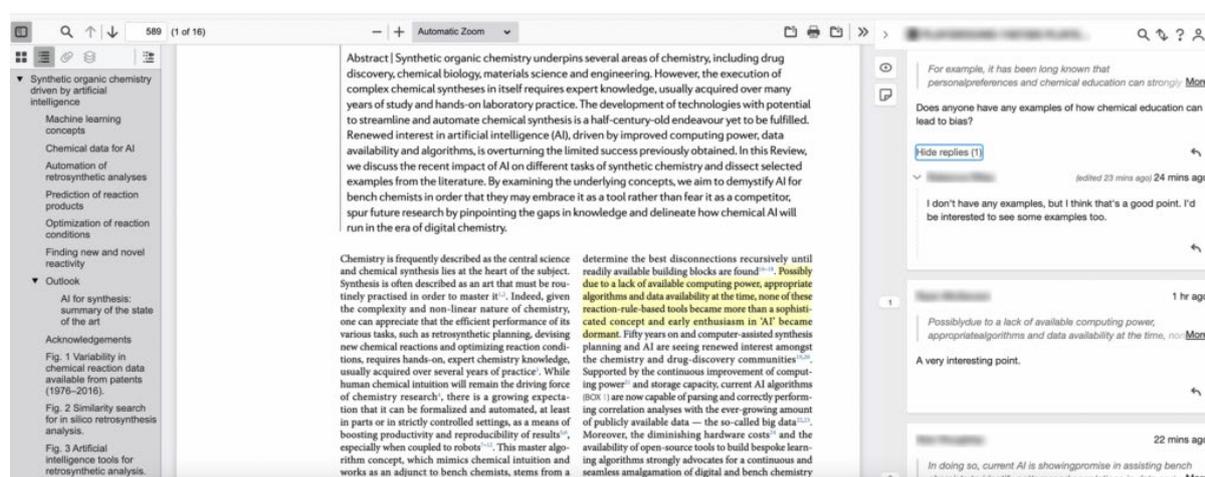
Hypothes.is is a tool which supports 'social annotation'. Social annotation involves reading and thinking together. Staff create a Hypothes.is 'assignment' in Blackboard, to share a pdf paper or web page which can be digitally annotated. Users collaborate to highlight, comment on, and share ideas about the 'assignment' digitally.

How do I access Hypothes.is?

- To access Hypothes.is [login to Blackboard](#) and open the relevant course unit.
- Locate your Hypothes.is link and click on the link to open the assignment.

How does Hypothes.is work?

When you open a Hypothesis 'assignment' you'll see the web page or PDF paper your instructor assigned alongside the Hypothesis sidebar.



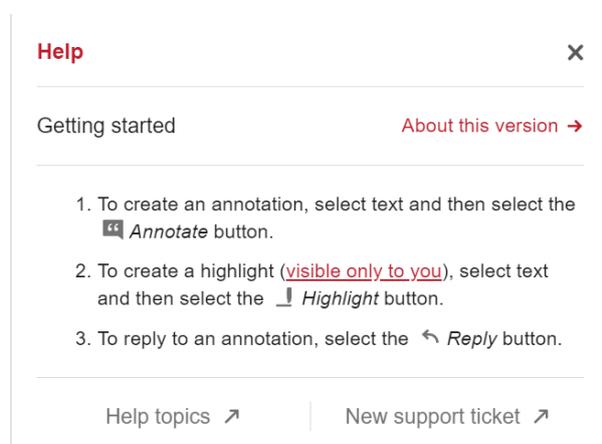
The screenshot displays a web browser window with a document titled 'Abstract | Synthetic organic chemistry underpins several areas of chemistry, including drug discovery, chemical biology, materials science and engineering. However, the execution of complex chemical syntheses in itself requires expert knowledge, usually acquired over many years of study and hands-on laboratory practice. The development of technologies with potential to streamline and automate chemical synthesis is a half-century-old endeavour yet to be fulfilled. Renewed interest in artificial intelligence (AI), driven by improved computing power, data availability and algorithms, is overturning the limited success previously obtained. In this Review, we discuss the recent impact of AI on different tasks of synthetic chemistry and dissect selected examples from the literature. By examining the underlying concepts, we aim to demystify AI for bench chemists in order that they may embrace it as a tool rather than fear it as a competitor, spur future research by pinpointing the gaps in knowledge and delineate how chemical AI will run in the era of digital chemistry.'

Chemistry is frequently described as the central science and chemical synthesis lies at the heart of the subject. Synthesis is often described as an art that must be routinely practised in order to master it¹. Indeed, given the complexity and non-linear nature of chemistry, one can appreciate that the efficient performance of its various tasks, such as retrosynthetic planning, devising new chemical reactions and optimising reaction conditions, requires hands-on, expert chemistry knowledge, usually acquired over several years of practice². While human chemical intuition will remain the driving force of chemistry research³, there is a growing expectation that it can be formalized and automated, at least in parts or in strictly controlled settings, as a means of boosting productivity and reproducibility of results⁴, especially when coupled to robots^{5,6}. This master algorithm concept, which mimics chemical intuition and works as an adjunct to bench chemists, stems from a half-century-old idea⁷. It is based on the idea that to determine the best disconnections recursively until readily available building blocks are found⁸⁻¹⁰. Possibly due to a lack of available computing power, appropriate algorithms and data availability at the time, none of these reaction-rule-based tools became more than a sophisticated concept and early enthusiasm in 'AI' became dormant. Fifty years on and computer-assisted synthesis planning and AI are seeing renewed interest amongst the chemistry and drug-discovery communities¹¹⁻¹³. Supported by the continuous improvement of computing power¹⁴ and storage capacity, current AI algorithms (BOK |) are now capable of parsing and correctly performing correlation analyses with the ever-growing amount of publicly available data — the so-called big data^{15,16}. Moreover, the diminishing hardware costs¹⁷ and the availability of open-source tools to build bespoke learning algorithms strongly advocates for a continuous and seamless amalgamation of digital and bench chemistry.

Annotations on the right side of the page include:

- For example, it has been long known that personal preferences and chemical education can strongly [More](#)
- Does anyone have any examples of how chemical education can lead to bias?
[Hide replies \(1\)](#)
- I don't have any examples, but I think that's a good point. I'd be interested to see some examples too.
- Possibly due to a lack of available computing power, appropriate algorithms and data availability at the time, no [More](#)
- A very interesting point.
- In doing so, current AI is showing promise in assisting bench chemists to identify patterns and correlations in data and [More](#)

You can add comments, raise questions, and post answers alongside the website/paper being reviewed.



Help ✕

Getting started [About this version](#) →

1. To create an annotation, select text and then select the **Quote** *Annotate* button.
2. To create a highlight (**visible only to you**), select text and then select the **Highlight** button.
3. To reply to an annotation, select the **Reply** button.

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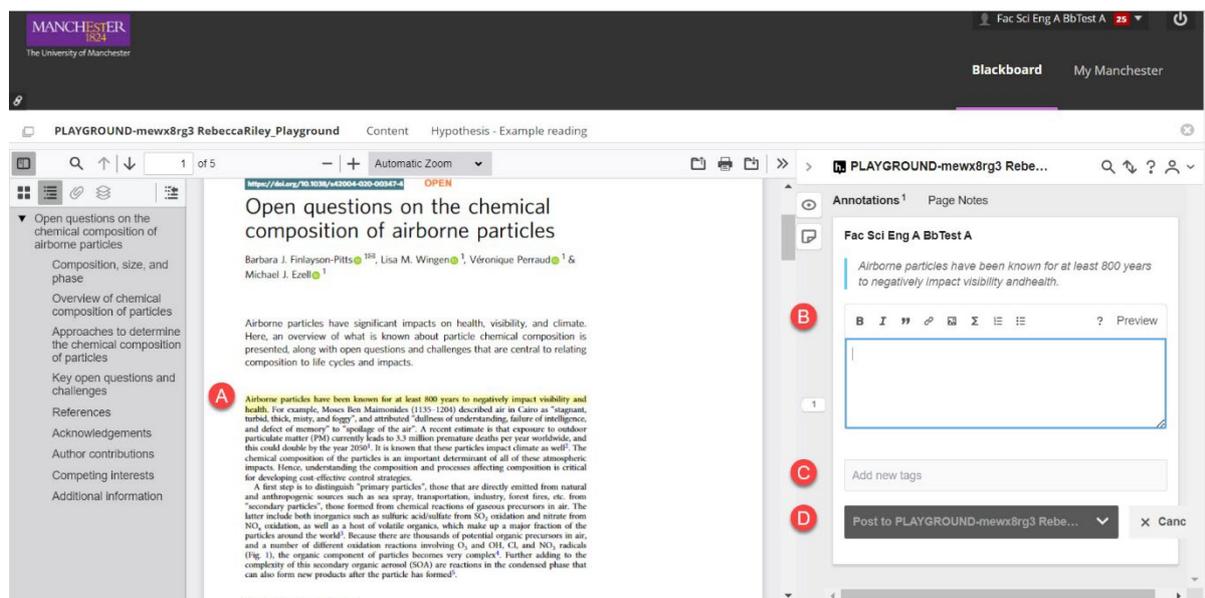
Quick steps:

To create a **Highlight** or **Annotation** click and select the text, to reveal a popup menu.

Click to choose Highlight or Annotation.
(NOTE: Highlights are only visible to the user who creates the highlight)

To add an annotation

- Click and highlight the text, select **Annotation**.
- Next, use the **annotation** text box to type your comment. You can also use the menu options to format text, [add links and images](#), [format annotations with LaTeX](#) and add basic lists (bullet points or numbered). Click **Preview** to see how your annotation will look and click **Write** to continue editing your annotation.
- Option to add tags.
- Click the post button to post the annotation.



Posted annotations will show in the Hypothes.is sidebar. Use the **pencil icon** to edit your annotation, use the **trash can icon** to delete your annotation and use the **arrow icon** to reply to comments.



Resources

You can also access an [Introduction for students guide on the Hypothes.is website](#). The guide contains brief instructions and screenshots of the key menu options in Hypothes.is