

Micro:Chem

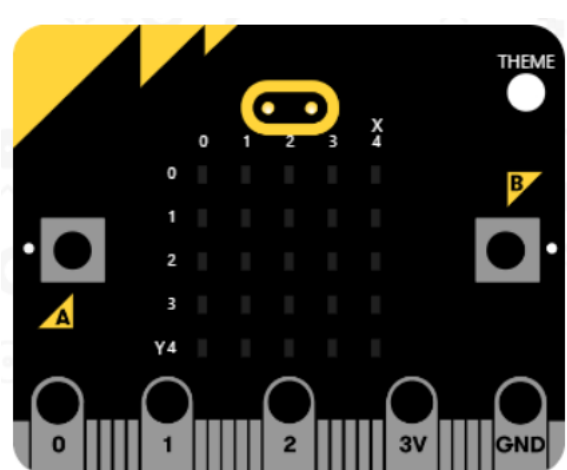
Bringing Chemistry Teaching into the 21st century

Abstract: Micro:Chem is the first-ever Micro:Bit-based didactic resource for Chemistry teachers. Its beauty lies on its simplicity: Each Micro:Bit becomes a chemical element or compound, allowing students to interact and understand chemical reactions by simply putting together the right elements. Our interface allows teachers to tailor their lessons from basic chemistry to A-Levels, as well as explain the subject in a digital and interactive way.

1


Motivation: How is the next generation going to learn?

- Children nowadays are Digital Natives - Digital and interactive environments are their learning playground.
- Teachers find a gap between the classrooms, which are full of analogue resources, and the digital world, full of interactive activities
- **Micro:Chem**, focused on Chemistry teaching, bridges this gap by providing an end-to-end digital and didactic tool. It engages students in chemical reactions, helping them understand the nature of interactions between elements and compounds.

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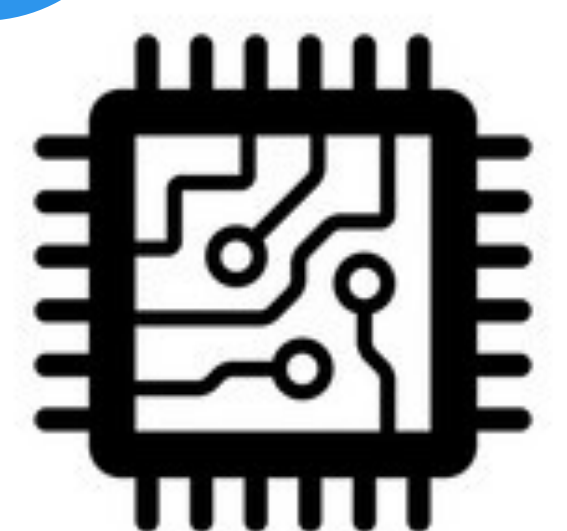
For Students: A touch of magic for a reaction to happen

- Students are provided with “ElementBits”: Micro:Bits representing elements or compounds. Our ElementBits are designed to sense other ElementBits near them, emulating the way elements react in the real world.
- When one of our ElementBits finds an element or a compound suitable for reaction, animations will appear on the Micro:Bit screen and the reaction will occur, showing the final product obtained.


3


For Teachers: Tools from basics to A-levels

- Teachers will always stay in control of the classroom using our Micro:Chem Teacher Interface. All ElementBits are monitored while active, and every reaction will be shown on screen. Supplementary information is displayed to help the teacher drive the explanation and engage the students.
- Micro:Chem comes with a selection of chemistry “scenarios” which assign certain elements and compounds to the ElementBits, ensuring that interesting reactions can occur. Teachers can tailor their lessons by selecting scenarios which are at a suitable level for their class.

4


Technical Details: How does it work?

- The ElementBits communicate and sense each other via the Micro:Bit radio interface, and relay reactions to the Teacher Interface via a Micro:Bit Hub.
- The Teacher Interface desktop application processes reactions and updates the ElementBits via the Micro:Bit Hub.
- A comprehensive database is provided with a range of elements, compounds and reactions.

