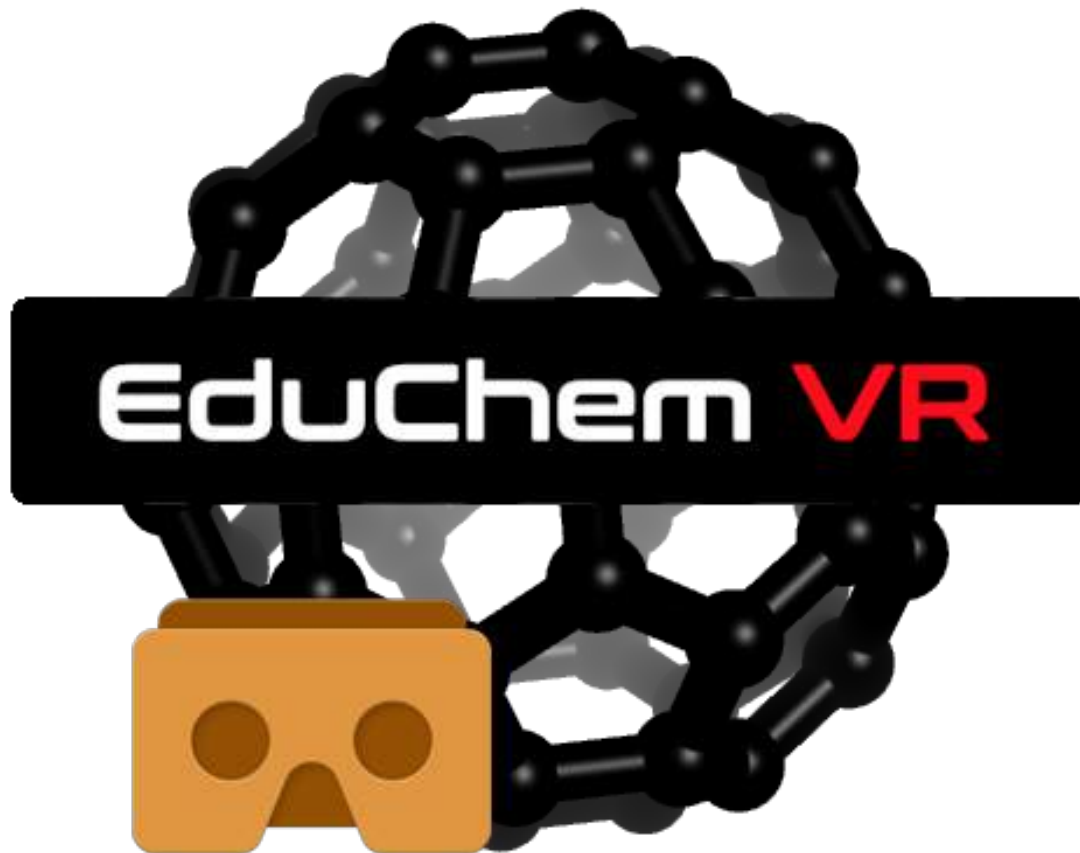


Gamifying Chemistry Education using Virtual Reality



Nonconfidential company presentation (May 18, 2017)

Concept

EduChem VR develops VR apps to increase learning



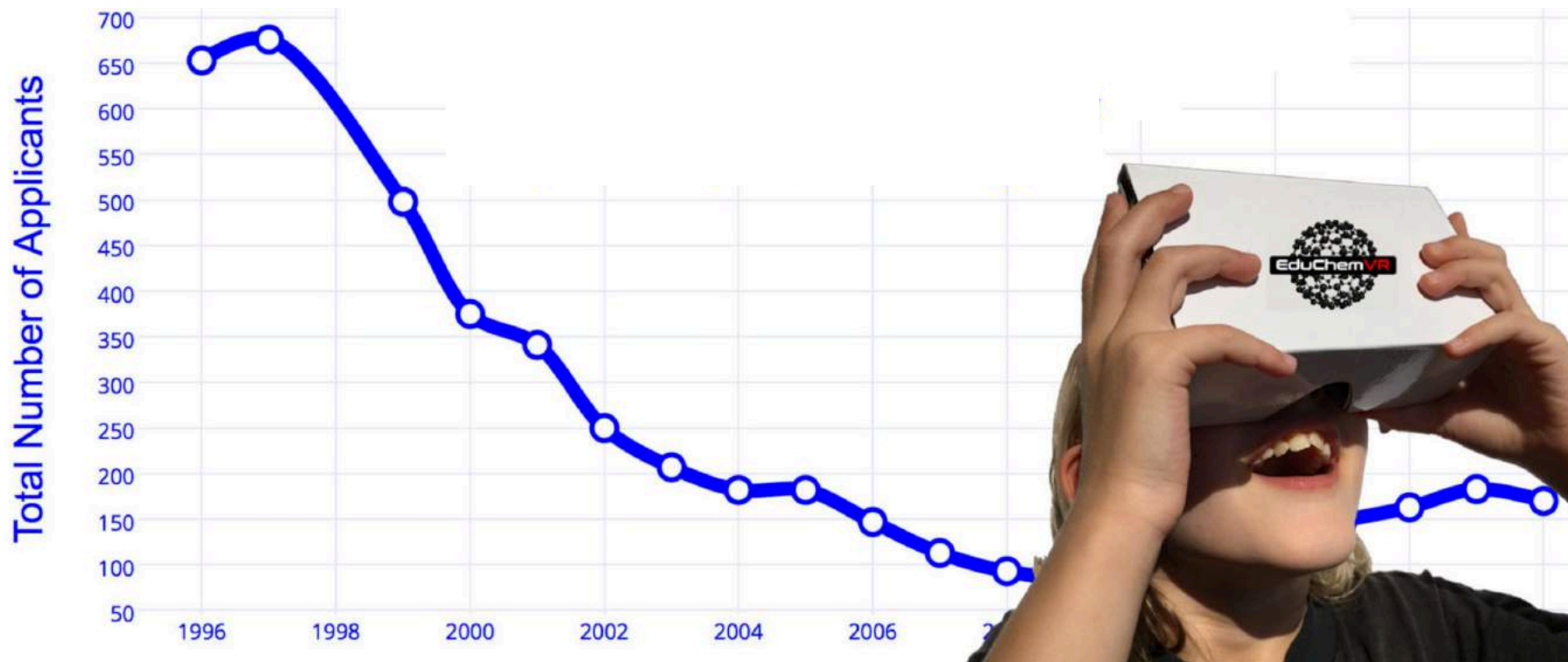
Our vision is to engage people in chemistry using VR

We believe that easily accessible smartphone apps and gamification are the means to learning and motivating students to discover the fascinating world of atoms and molecules.

Problem

Chemistry is not seen as an attractive school subject

Leading to a steady decline in the number of students (and teachers). For example at the University of Gothenburg



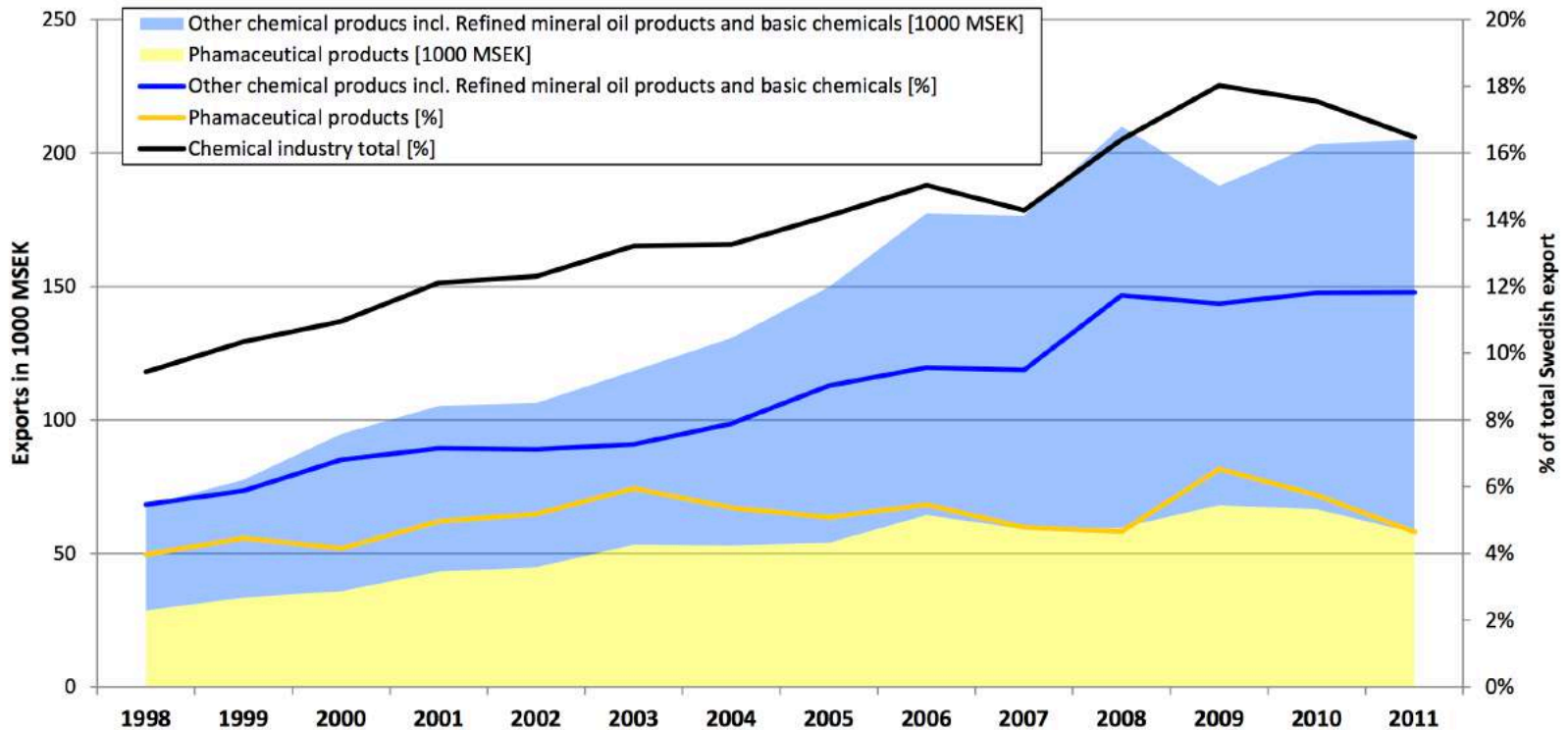
Chemistry skills are needed in many, many areas

To treat disease, environmental issues, develop new materials, within cosmetics, cleaning and petroleum refining, etc, etc)

With recent advances in VR technology we can teleport students to a virtual world of atoms and molecules.

Impact

16% of Swedens export (2011) comes from the chemistry industry
(VINNOVA Analysis VA 2013:01 "[Chemical Industry Companies in Sweden](#)")



The VR market expected to be huge

Goldman Sachs predicts VR to be an \$80 billion market in 2025

Forbes (2016): "[Virtual And Augmented Reality Become Realistic Revenue Generators](#)"

(Mobileapps predicted to take 70% of the market)

Mobileapps

There are two billion smartphones in use globally
EduChem VR can reach anyone, anywhere



Google Cardboards: 5-20 USD



OculusRift/HTC Vive: 700-999 USD
(excl high-end computer, cables...)

Accessible, inexpensive and easy-to-use

“The biggest barrier [for using tech/VR in schools] is definitely access”

See [Google Expeditions](#) successful VR apps

Survey says that [83% of teachers](#) wants easy-to-use VR in school



Virtual Reality

– comes with an inherent wow factor!

VR – technology now mature

- Gartner hype cycle: VR have reached the plateau of productivity, and approaching mainstream adoption.

VR – for understanding of abstract concepts

- The Labster life science company demonstrated improved learning outcomes (76% higher scores) compared with traditional teaching ([Bonde et al. Nature Biotechnology, 2014](#)).

VR – ideal for learning and educational purposes

- Research have shown that when you put a person in a place, they are more likely to remember it – retention of knowledge. It's great for engagement!

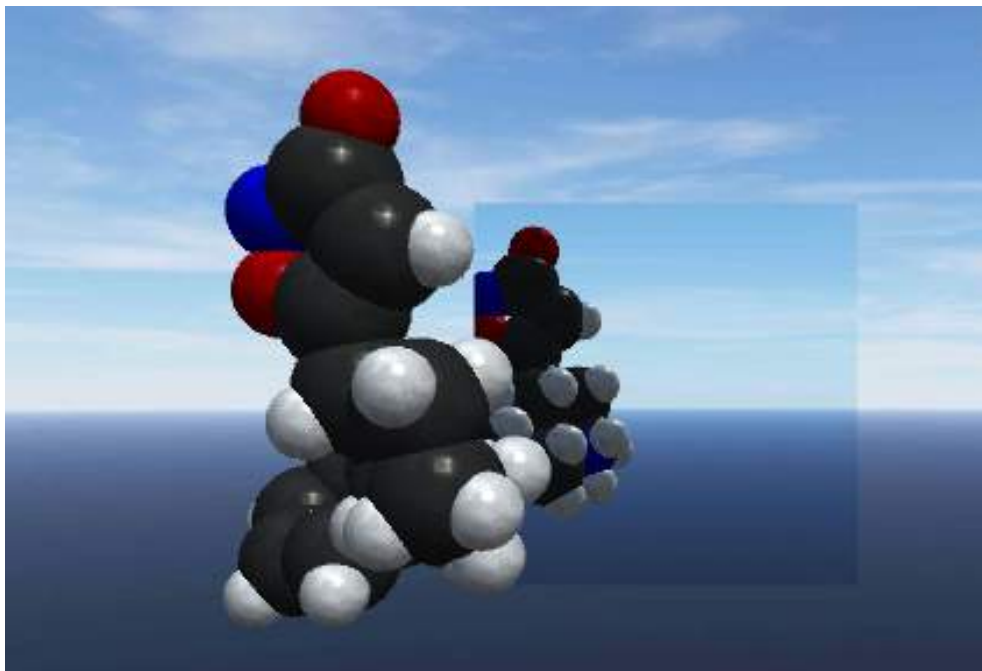
VR – more efficient than traditional tools

- *“It can take a day to set up an exercise using traditional physical molecular models. With EduChem VR apps this is instant”* Ass Prof. C-J Wallentin, University of Gothenburg

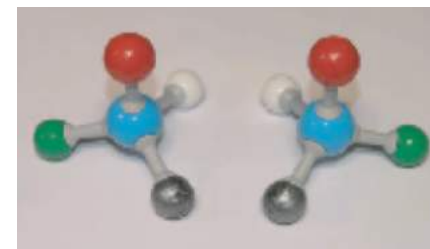
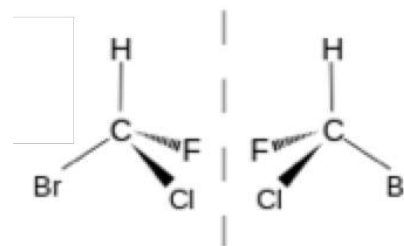
Use-Case

Explaining (the importance of) stereochemistry

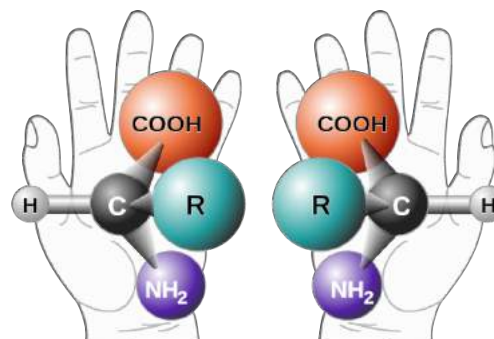
VR apps with animated scenes



Traditional teaching



pen & paper/whiteboard/physical models



“StereoChemistry is just one concept which is difficult to explain with paper&pen/white-board. It can take a day to put up such an exercise using traditional methods. With your VR apps this is instant and the technology is applicable in all our courses.” Ass Prof C-J Wallentin

Examples: Thalomid, R/S-ibuprofen, losec/nexium, escitalopram/citalopram, L/D-amino acids

Virtual Reality experience more efficient and better as learning tool

Celebrity Users

His Majesty King Carl XVI Gustaf of Sweden, the Crown Princess of Sweden, the Sports Minister of Chile, the Executive Vice President at AstraZeneca and the Head of Business Development at EA Sports have all experienced atoms and molecules using our open-source VR tool.

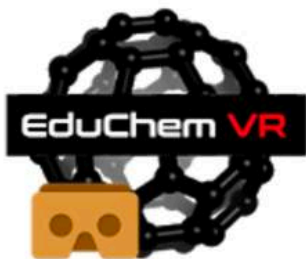


We now shift focus and turn towards tomorrow's leaders –
the school children across the globe

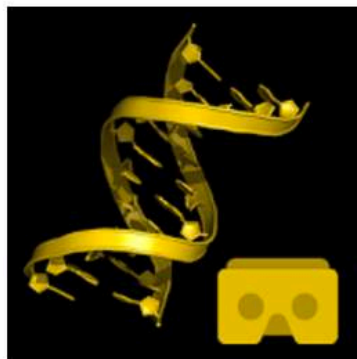
Products

Two freemium virtual reality apps are available on Google Play (Android) and AppStore (iPhone)

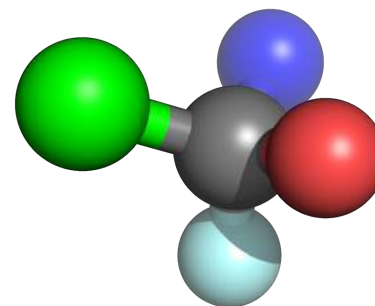
EduChem VR



Learning Carbons VR
EduChem VR



Learning MacroMols VR
EduChem VR



+ **“Learning StereoChem VR”**

Just released!!

Experience the different forms of carbon (diamond, graphite, etc.) in **“Carbons VR”** and the famous DNA double-helix and other selected macromolecules in **“MacroMols VR”**

Offerings

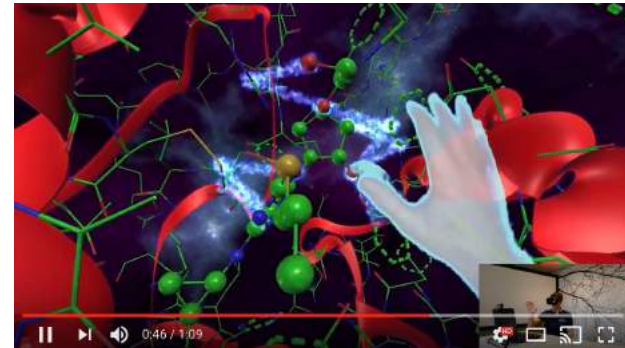
1. Freemium mobile apps

- “Learning **Carbons VR**”
- “Learning **MacroMol VR**”
- “Learning **StereoChem VR**”



2. Tailor-made VR apps*

- customized towards customer needs,
(all major VR platforms supported!)



3. Consulting

- Support, installation, maintenance and further development of enterprise version “[Molecular Rift v2](#)”

** Please note that tailor-made apps are not necessarily restricted to chemistry education. We are open for other areas (physics, math) and models of collaboration. VR apps for PR purposes are feasible already now.*

Monetization

1. Freemium mobile apps

2017 Goal: release five unique apps, achieve 10 000 downloads

2. Tailor-made VR apps*

2017 Goal: one order from Educational institute/Science Centre

3. Consulting

2017 Goal: one contract with tech/pharma company

Income to be re-invested, allowing us to move faster and acquire specialists skills to support the growth and mission of our company.

We currently have no costs (except time spent)

Events

Invited talks at several international EdTech meetings ([Cambridge](#), [Copenhagen](#), [Fulda](#) and [Stockholm](#)).

Front cover in “The Medicine Maker”

Highlighted in Swedish financial magazine “Veckans Affärer”



Selected among the [15 hottest EU start-ups!](#)

Listed as winner in "[Startup Europe Micro-Grants](#)"

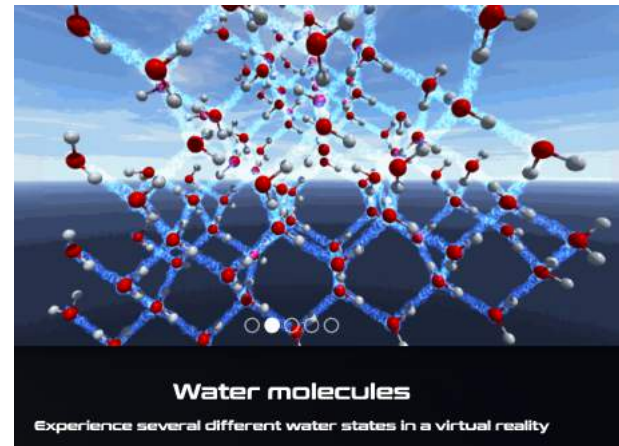
Planned: [SciFest](#), [EMBL-EBI](#), [EU-StartUp](#), [VR World](#), [WLS2017](#), [VRST2017](#).

Pilots

Activities planned investigating the application of our VR apps in K-12 and University education, and compare to traditional teaching.

- Advanced chemistry in collaboration with the The American University of Beirut.
- K-12, throughout secondary schools in Sweden.

Specific VR apps creating meaningful learning episodes to be made. Contacts have been established.



We also see great opportunities for VR in lower grades – where the main aim is to raise engagement/interest

Technology

Unity – a multiplatform game-engine is used for development

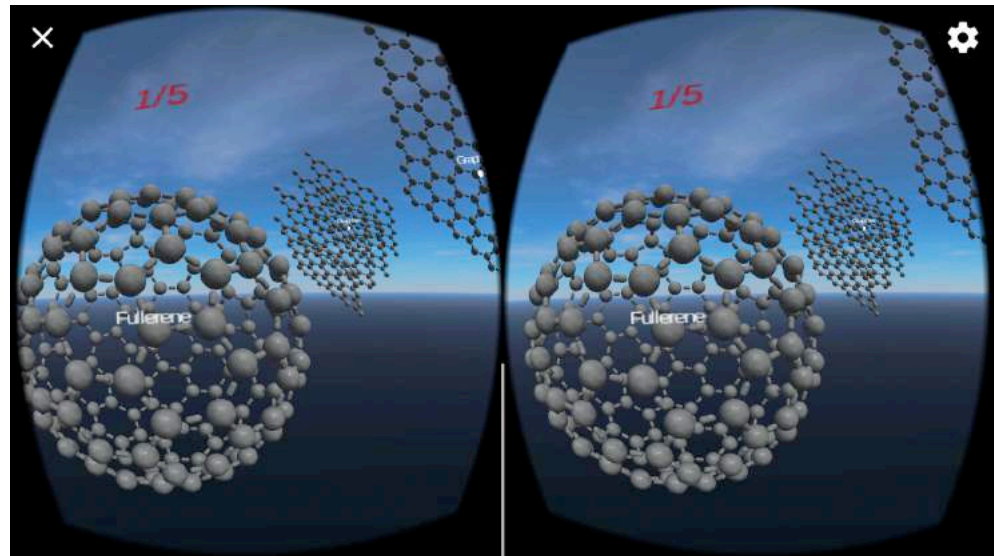
- We can build and deploy across all major VR platforms.

Native support is available for a wide range of VR platforms:

- Google Cardboard, Samsung, Gear VR, Oculus Rift, Playstation VR, Microsoft HoloLens, Steam VR/Vive and Google Daydream.

All molecular objects (atom, bonds) are rendered from coordinates

- using any standard file type



With VR tech we can go beyond traditional learning, and story-telling

Strong Team



EduChem VR

founded September 2016 by

Dr. Jonas Boström, CEO

Principal Scientist and Associate Professor

Drug designer in Big Pharma since 15yrs

50+ articles and patents. On The Power List and recognized as Top-100 of most influential people in Pharma

Magnus Norrby, CTO

Professional programmer in Finance

Main developer of open-source Molecular Rift

Domain knowledge in virtual reality and cheminformatics

We have been working together almost a decade!

*The EduChem VR board includes senior scientists:
a professor in Biology and a professor in Chemistry*

Details

Full Company Name: EduChem VR Sweden AB

Contact

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Social media

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Twitter: <https://twitter.com/EduChemVR>

Facebook: <https://www.facebook.com/EduChemVR/>

Instagram: <https://www.instagram.com/educhemvr/>

