



## Vaughan Royce Kildaire

BSc. science graduate,  
physics & chemistry.



18 June 1995



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## About me

My name is Vaughan, I am a **BSc.**

**Physics and Chemistry** graduate.

My passion has always been within the field of physics, which I excelled in during my studies. I have, *however*, taken quite an interest into chemistry as well - a field I find a lot more approachable.

I even have my own mini chemistry lab with professional equipment which I conduct regular experimentation within along with documenting it for my [YouTube channel](#).

## Citizenship

I am a dual-citizen of **South Africa** and **Portugal**. Willing to **relocate**.

## Spoken languages

English

Portuguese

Afrikaans

## Education

2021 - 2024 Bachelors of science Degree, **CUM LAUDE**

BSc. Physics and chemistry (complete) University of South Africa (UNISA)

### Relevant coursework:

#### Chemistry:

##### THEORY:

- Organic chemistry
- Inorganic chemistry
- Analytical chemistry
- Physical chemistry
- Polymer chemistry

##### APPLIED:

- TLC, NMR, IR +UV-vis spectroscopy
- Extraction of organic and inorganic compounds
- Synthesis of organic compounds, inorganic complexes, and synthetic or bio-organic polymers.
- Crystallization and recrystallization of pure elements and organic chemicals.
- Standard titrations, potentiometric titrations, Volhard back titrations.
- Metal Electroplating, construction of Galvanic or electrolytic cell.
- Distillation of SO Many Different Chemicals.

#### Physics:

- Electromagnetism and thermodynamic physics.
- General relativity gravity and tensor calculus\*.
- Differential geometry, applied metric spaces\*.
- Engineering physics and statistics.
- Ordinary and Partial differential equations\* (ODE, PDE\*).
- Calculus in higher dimensions.
- Linear algebra.
- Real analysis\*.
- Quantum mechanics, solid state physics.

*\* Taken as extra for enrichment purposes*

2019 - 2020 Amended matric

NSC

Amended matric: physical science and mathematics.

Dec. 2013 High school

Bridge House School

High school matric, Bridge House. Franschhoek, 7690, South Africa

## Experiences

since 2020 Tutoring

Teach Me 2, and Private practice

I have worked as a private and part time employed tutor since 2020. If I could, I would Teach at a formal institute, as I really enjoy teaching as much as I enjoy learning. Subjects I Teach include: University; mathematics, physics and chemistry, and Highschool; math and physical science. This includes letters of reference from past clients.

since 2022 Lab work

UNISA, and Delta Labs (Pty) Ltd.

I have Laboratory Experience In may synthesis and procedures; e.g., in saponification, nitrating, synthesis of aspirin and extraction of caffeine from tea. I have Also Funded and conducted my own experiments and synthesis, for the following:

- 1. Solvated electrons experiment and condensation of ammonia
- 2. Teaching titrations to students
- 3. Nitrating of cellulose, to make nitrocellulose
- 4. Saponification to make soap

## Delta Labs

I run Delta Labs, a passion project of mine, whereby I create education chemistry content in the form of YouTube videos. These take place in a small-scale laboratory of mine that I have built over the years. It has helped me maintain my practice in the lab environment along with helping me gain a huge amount of additional experience in the process.

## Religion

Roman Catholic.

No frequent Sunday work, if possible.

## Projects

- 2021-2025 **Chemistry Projects** Personal project  
Successfully funded and accomplished personal project experiment of: Solvated electrons of lithium metal in liquid ammonia! Chemistry and general Science Lab Experience; TLC, NMR, IR +UV-vis spectroscopy, Extraction of caffeine, formation and crystallization of iodine, synthesis of pharmaceutical complex, many inorganic cobalt complexes, soap, synthesis of nitrocellulose, ammonium nitrate crystallization, Chen-Kao organic complex, Solvated electrons, standard titrations, potentiometric titrations, Volhard back titrations, copper electroplating, determination of eutectic point and azeotropic point of liquid and solid (organic and metal) substances, and many more.
- 2021-2025 **Computer programming** Personal project  
Experienced in Python programming language and applied applications, both from training and self-project research. Learned how to implement RSA encryption in C++.  
Programming Languages: **Python and C++/C .**

