SUMMER FELLOWSHIP REPORT 2022

GRAPHICS & ANIMATION

Submitted by

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Under the Guidance of

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From 25th April 2022 to 25th June 2022

ACKNOWLEDGMENT

I, the summer intern of the FOSSEE, am overwhelmed in all humbleness and gratefulness to acknowledge my sincere gratitude to all those who have helped me put my ideas to perfection and have assigned tasks well above the level of simplicity and into something concrete and unique. I wholeheartedly would like to thank and express my gratitude to **Prof. Kannan M. Moudgalya**, IIT Bombay, for making it possible for me to work on this project.

I would like to express my deep and sincere gratitude to my senior project advisor and mentor, **Mr. Khushalsingh K. Rajput**, Project lead (FOCAL) & Sr. Software Engineer (FOSSEE), IIT Bombay, for the enthusiasm and continuous support, in helping me complete the project successfully. I am extremely thankful and deeply moved by his round-the-clock support and patience in sharing his immense knowledge without any limits or boundaries. His fatherly approach toward students combined with outstanding problem-solving and management skills is a euphoric treasure worth experiencing firsthand.

I am feeling blessed that I got an opportunity to work for this fellowship. It is always fruitful to work on such a project full of brainstorming ideas.

I am extending my thanks to my colleague from this fellowship for providing quick support and critical analysis at different stages and out of the project.

I would like to thank my parents and friends for supporting me in this fellowship. Lastly, I would also like to thank all the people who supported and wished for the success of my internship directly or indirectly.

Last but not the least, I thank the management of IIT Bombay and the FOSSEE team for conducting this Fellowship. I thank Professor Kannan M. Moudgalya yet again for his eagle-eyed supervision which made this fellowship a grand success.

With Regards,

Syankita

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INTRODUCTION

About the Fellowship

The FOSSEE project (Free/Libre and Open Source Software in Education) promotes the use of FLOSS (Free/Libre and Open Source Software) tools in academia and research. This project is part of the National Mission on Education through Information and Communication Technology (ICT), the Ministry of Human Resource Development (MHRD), and the Government of India.

The FOSSEE Summer Fellowship is a grand opportunity for students from any stream to be a part of the FOSSEE project, with the ultimate aim being the promotion and development of Free/Libre and Open Source Software in education.

I was selected as a 2D Graphic Designer in the Graphics and Animation category of the fellowship and was placed under the mentorship of Mr. Khushalsingh K. Rajput, Project lead (FOCAL) & Sr. Software Engineering (FOSSEE), IIT Bombay.

Duration of the Fellowship

I chose the part-time FOSSEE Summer Fellowship 2021 which spanned from 25th April 2022 to 25th June 2022.

Aim & Objectives

AIM:

- **Make artworks for FOCAL (Free and Open-source Creative Art Library).**
- **To create XIIth Std. science syllabus chapter's infographics that can help the students to summarize the concepts through that graphics.**

OBJECTIVES:

- Make 20 different artworks/templates using various open-source software, which can easily clarify the 12th standard concepts on various topics of the science syllabus.
- To make it obvious that using FOSS tools is easy, economic, and reliable.
- Promote FOSS tools among the general public.

Software

- Inkscape - a professional quality vector graphics open source software.
- Scribus - It is designed for layout, typesetting, and preparation of files for professional-quality image-setting equipment.

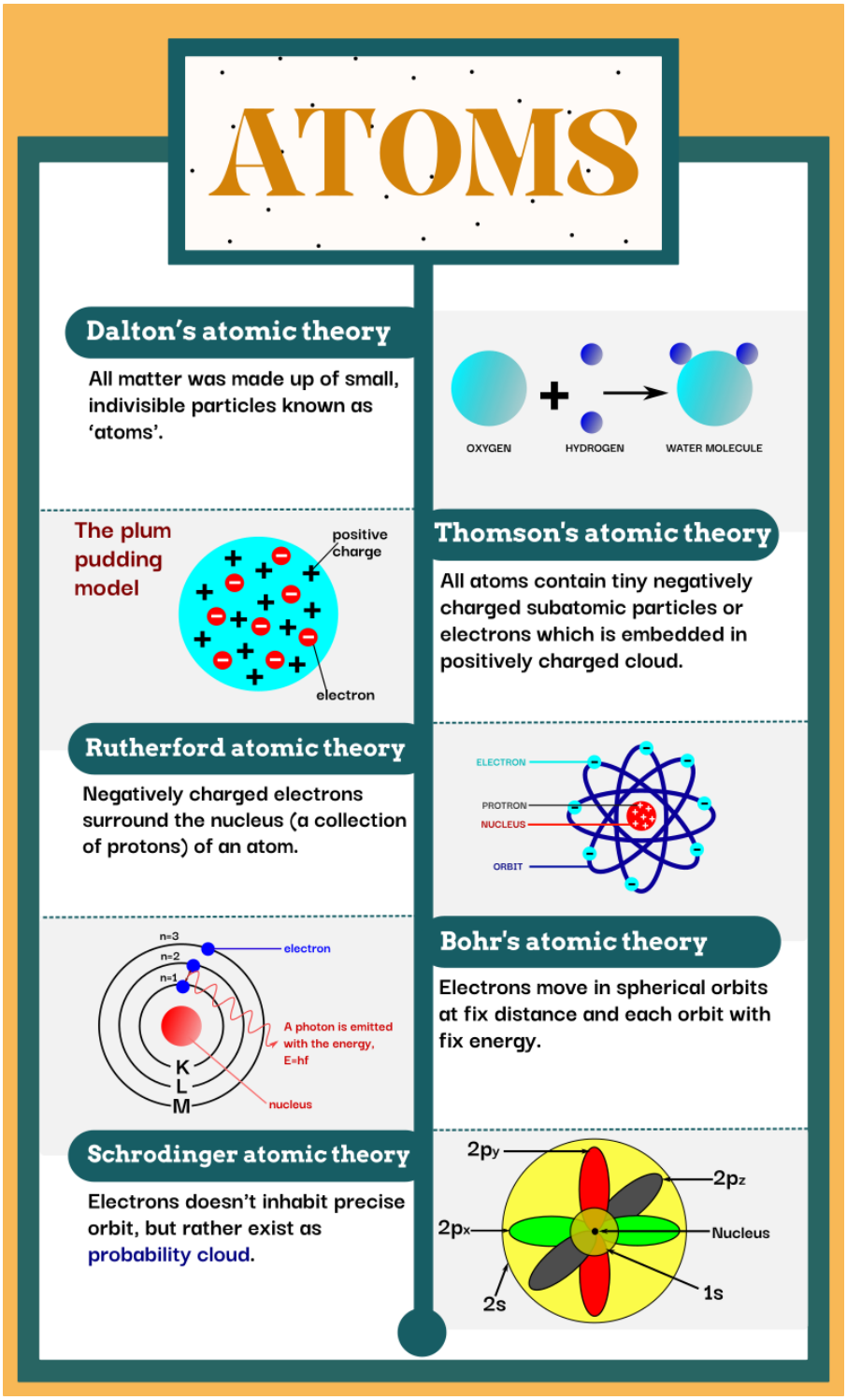
Project Plan

Make 20 artworks from but not limited to the following using FLOSS tools:

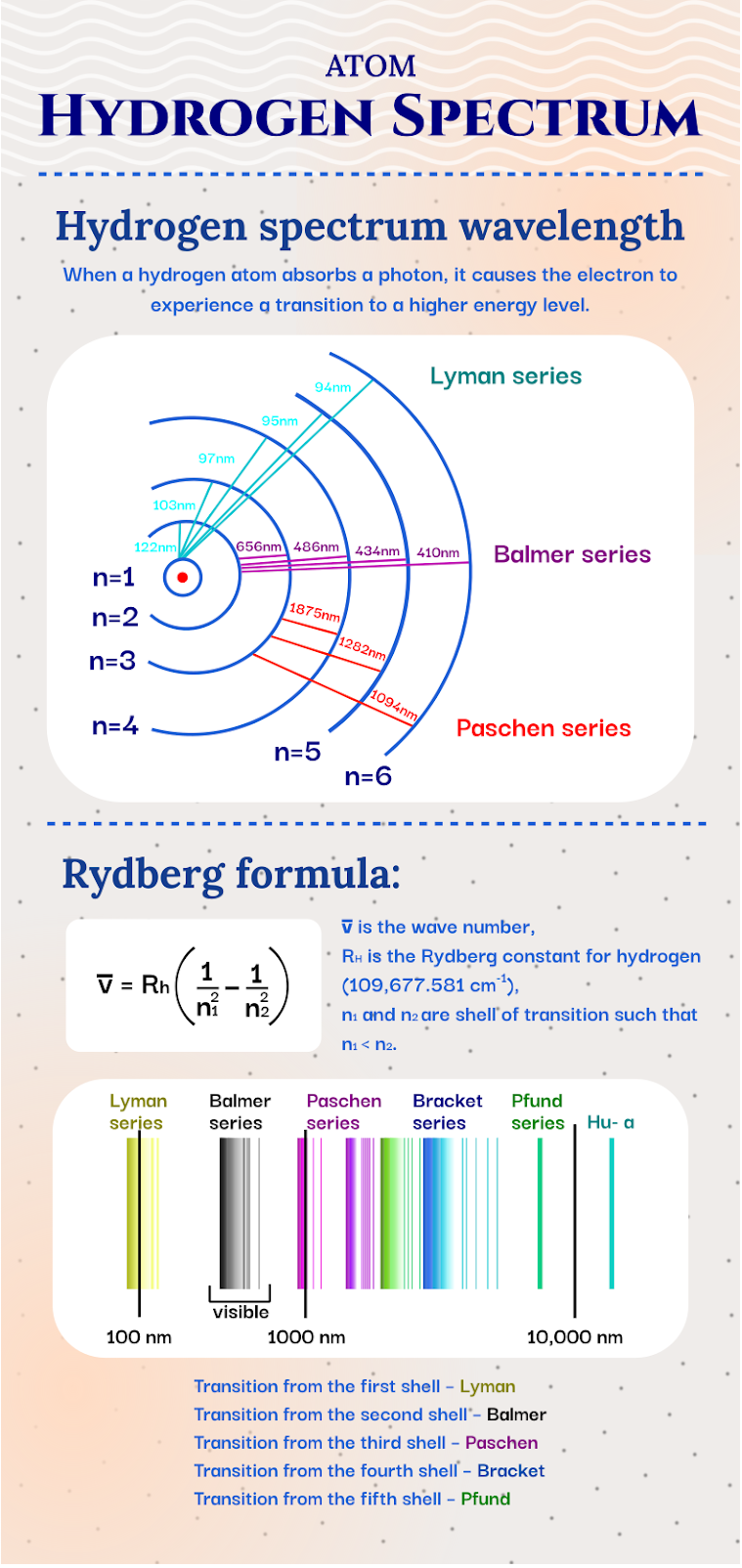
- XIIth Std. science syllabus chapter's Infographics
- Icon
- Social media post
- Brochure

Project Outcome

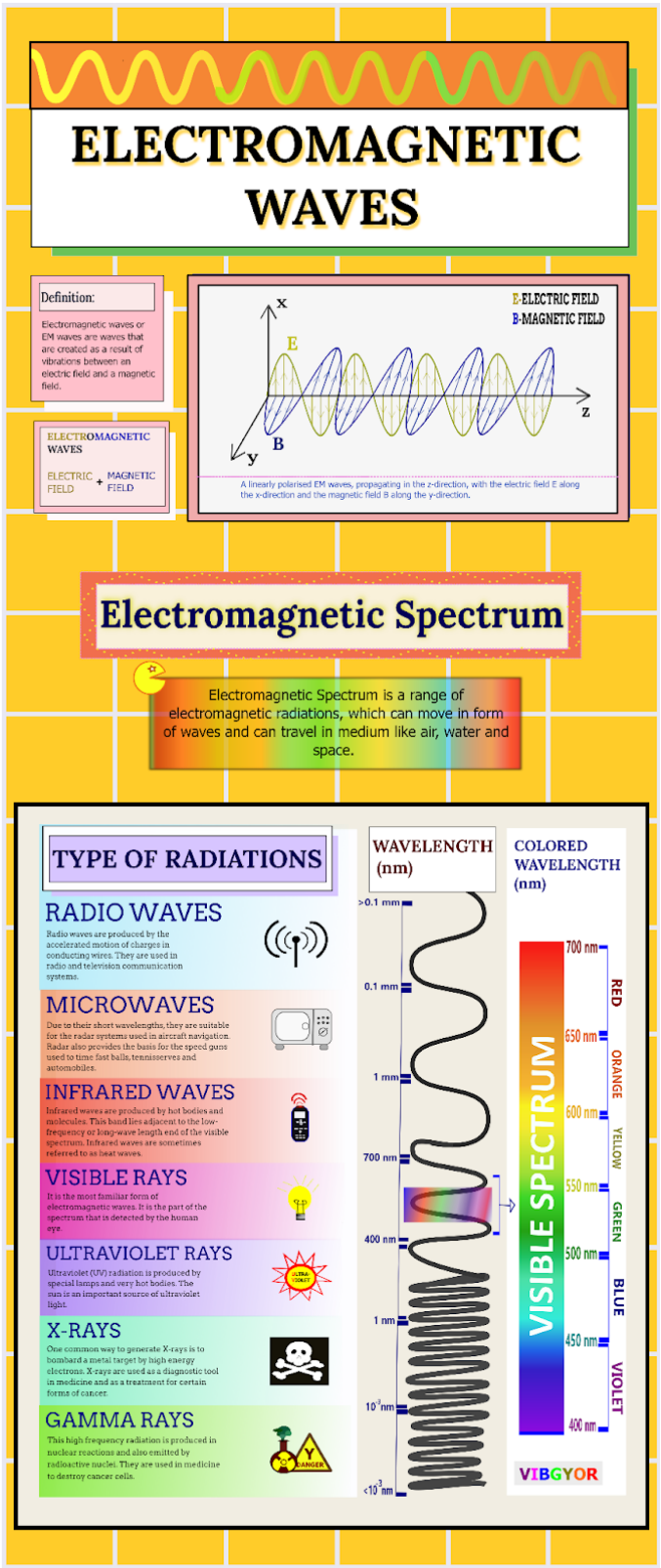
Artwork 1 - Atom History



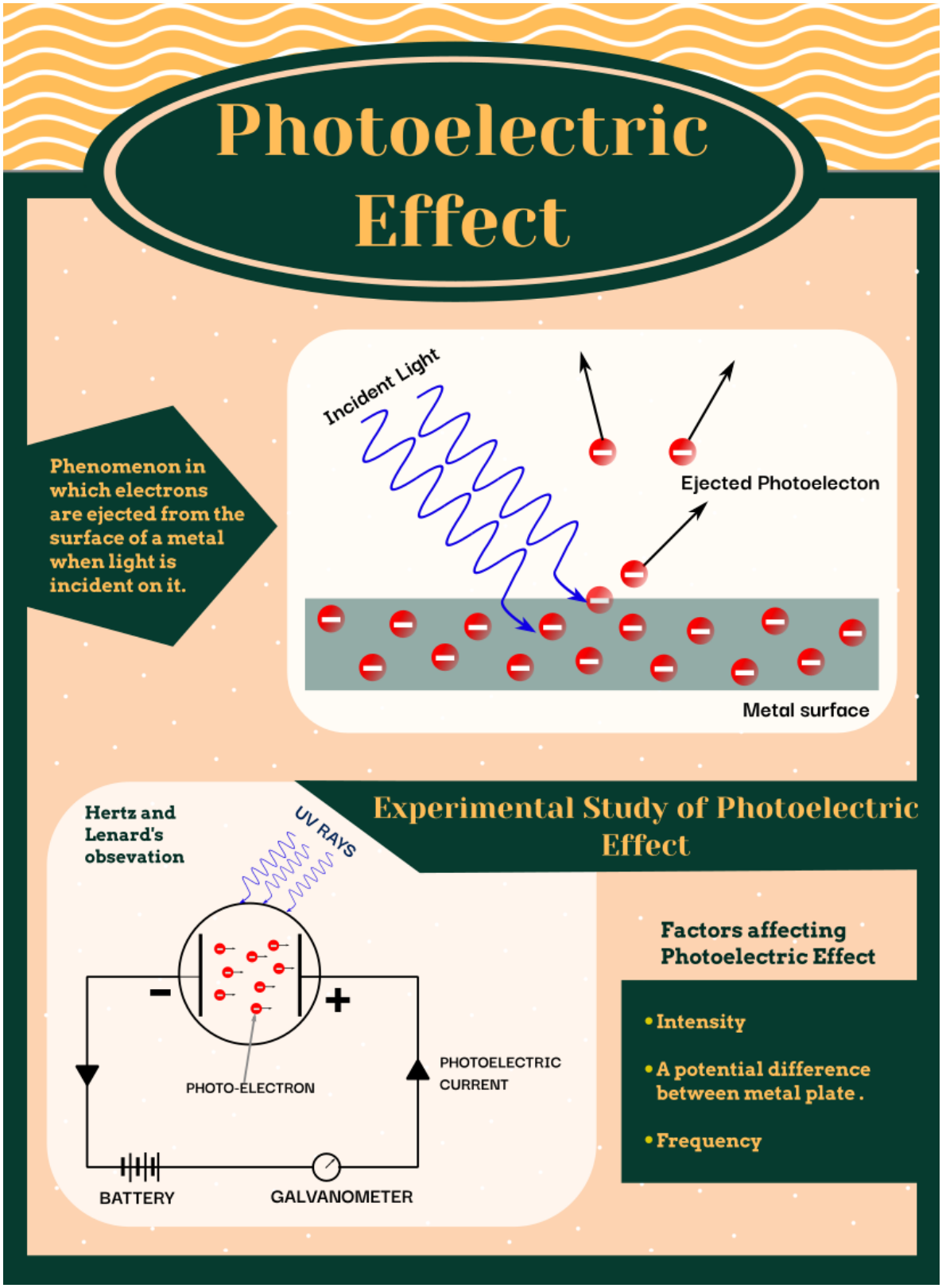
Artwork 2 - Hydrogen Spectrum Explanation



Artwork 3 - Electromagnetic Waves



Artwork 4 - Photoelectric effect



Artwork 5 - Dual Nature of Radiation and Matter

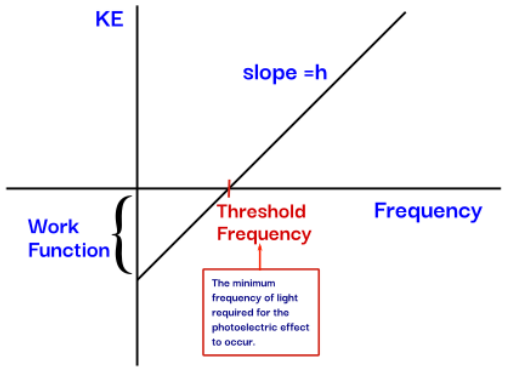
Photoelectric Effect

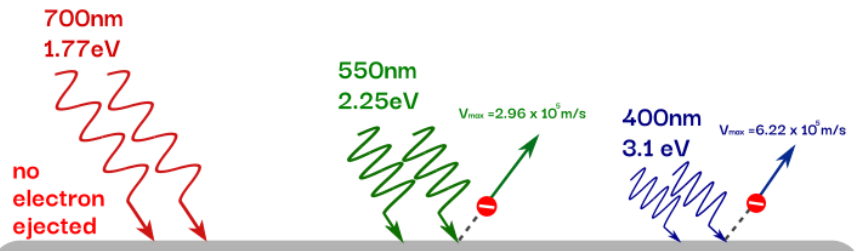
Relationship between the Frequency and the Kinetic Energy

$E_{photon} = \Phi + KE$

$hf = hf_{th} + \frac{1}{2}m_e v^2$

- E_{photon} - energy of the incident photon, (= hf),
- Φ - threshold energy,(= hf_{th}).
- KE - kinetic energy of , (= $\frac{1}{2}m_e v^2$ (m_e = mass of electron = $9.1*10^{-31}$ kg)),
- h - Planck's constant.





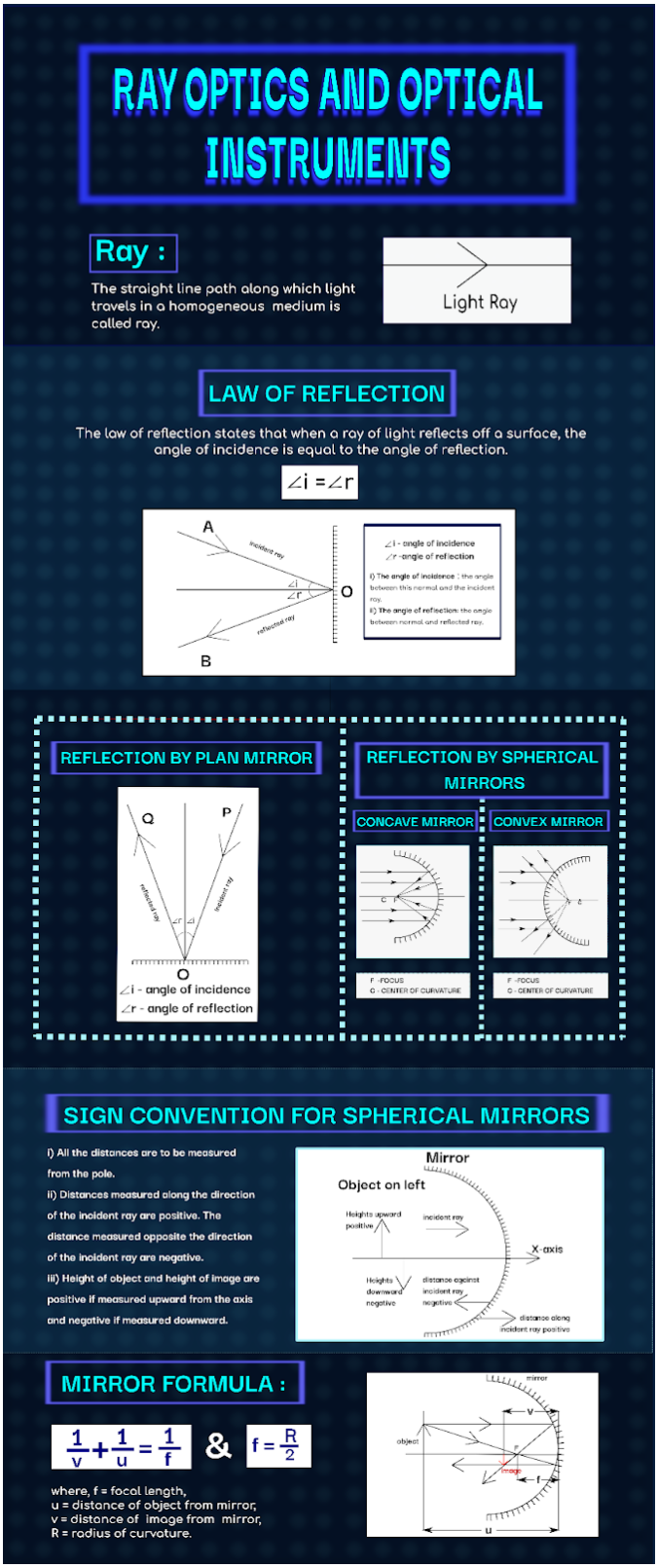
Potassium needs 2eV for electron ejection

The photoelectric effect does not occur when the red light strikes metallic surface because the frequency of red light is lower than the threshold frequency of the metal.

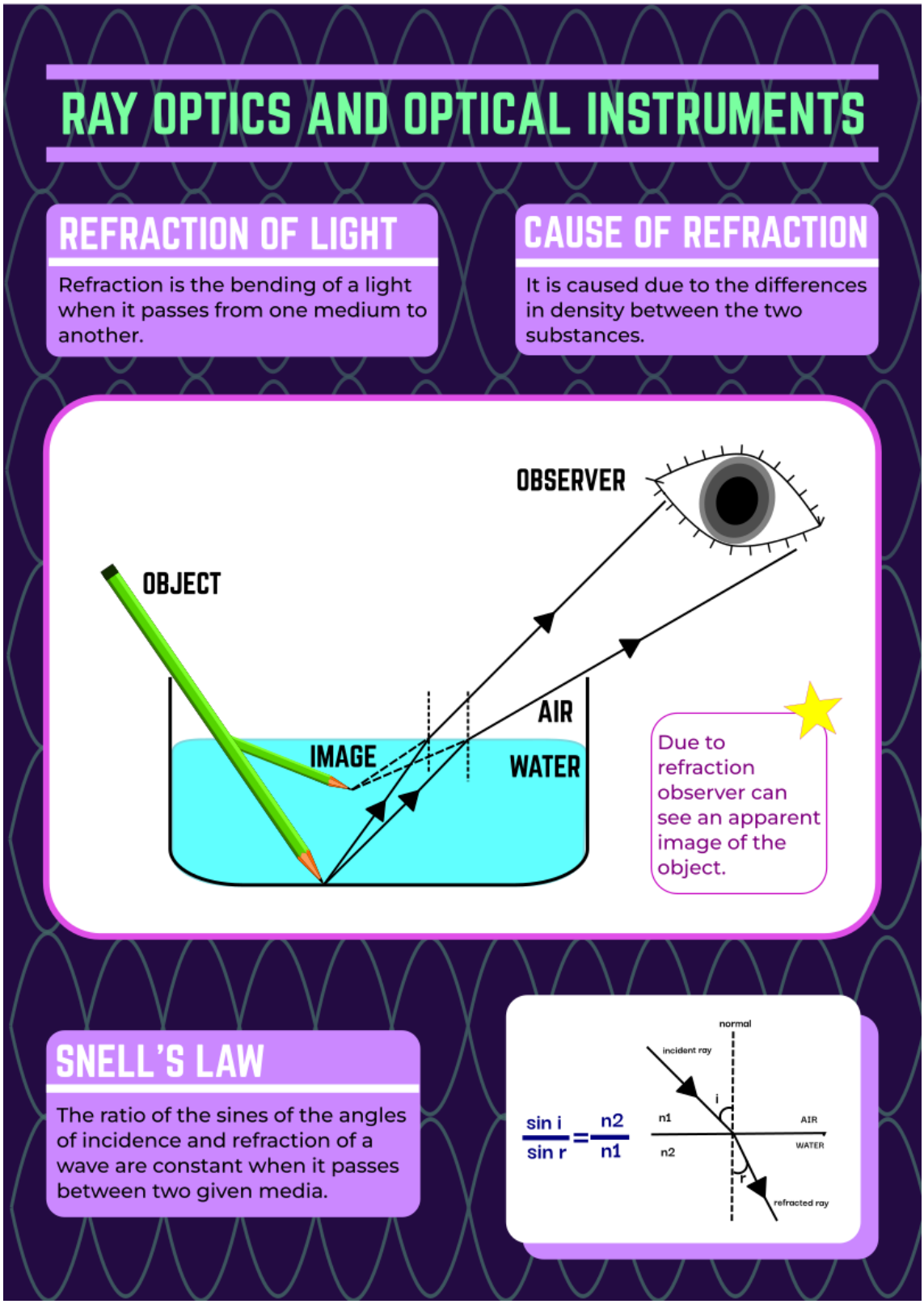
The photoelectric effect occurs when green light strikes metallic surface and photoelectrons are emitted.

The photoelectric effect occurs for blue light. However, KE for blue light is greater than green light. Because blue light has greater frequency than green light.

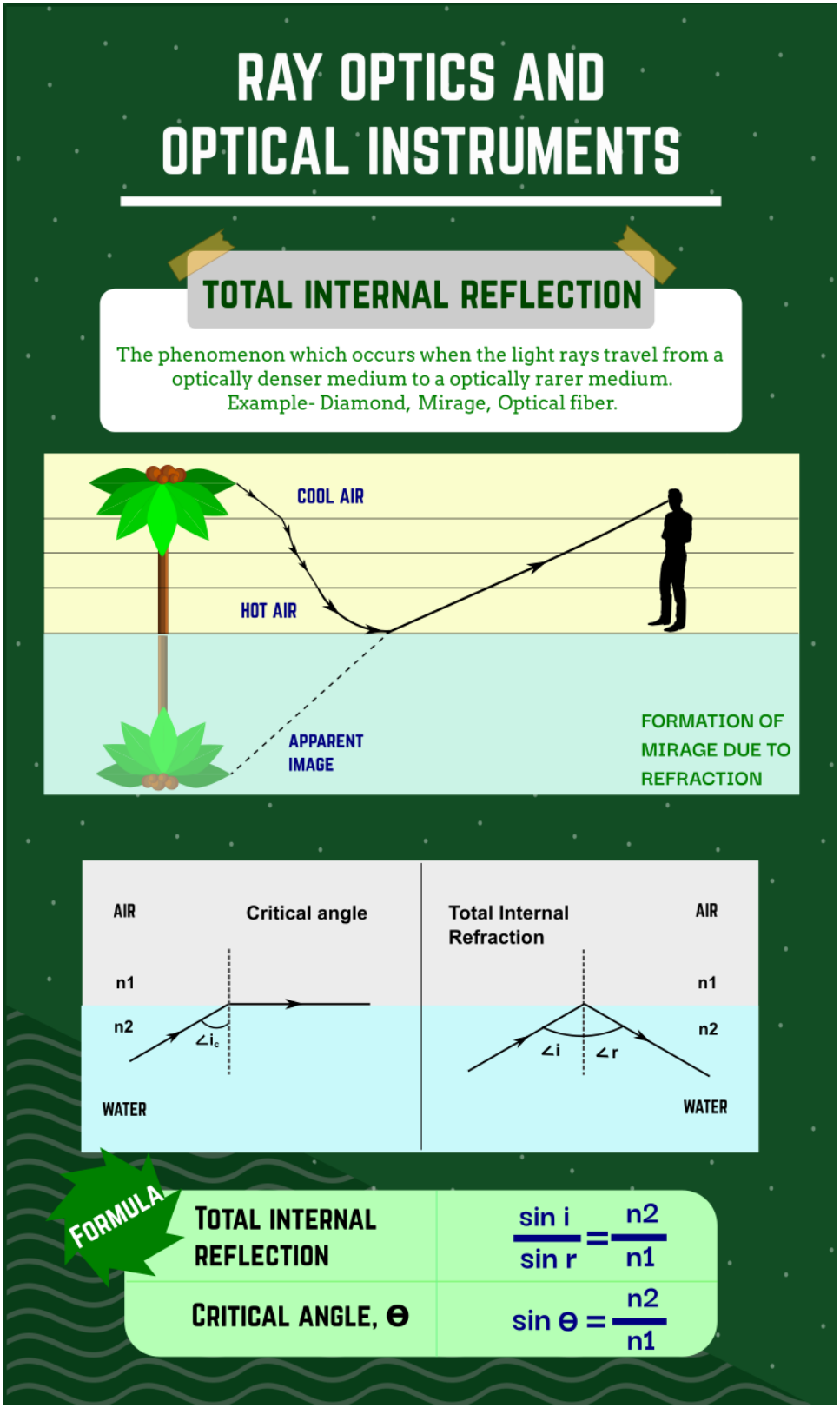
Artwork 6 - Reflection



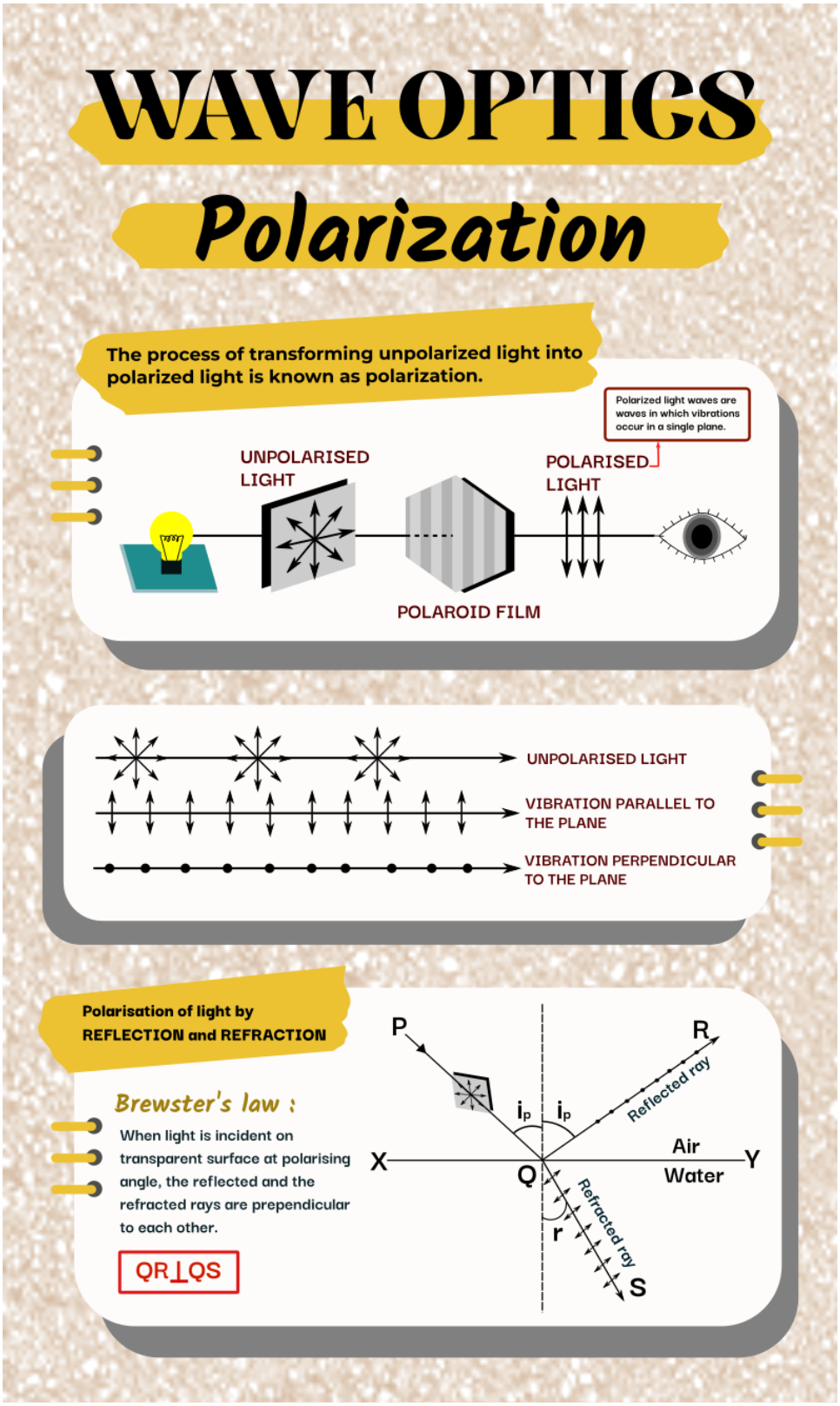
Artwork 7 - Refraction



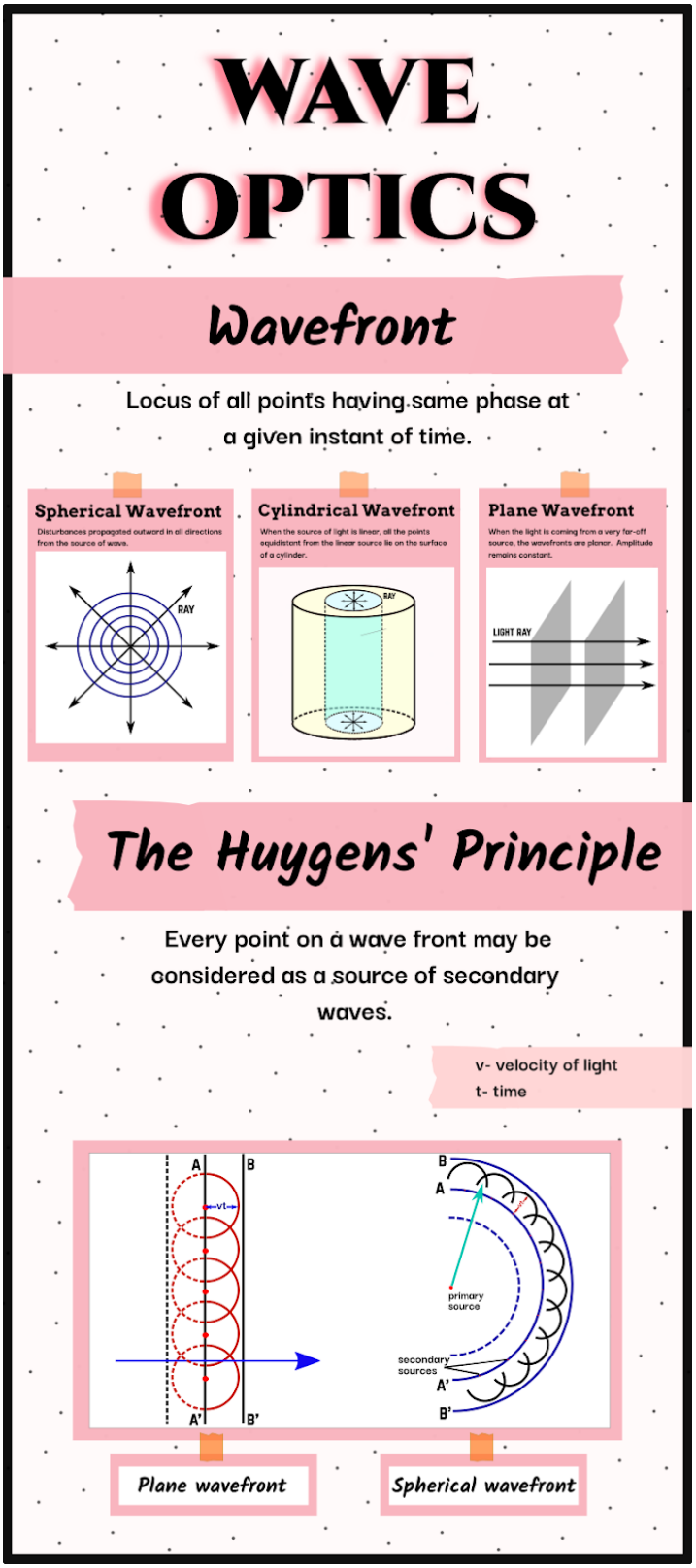
Artwork 8 - Total Internal Reflection



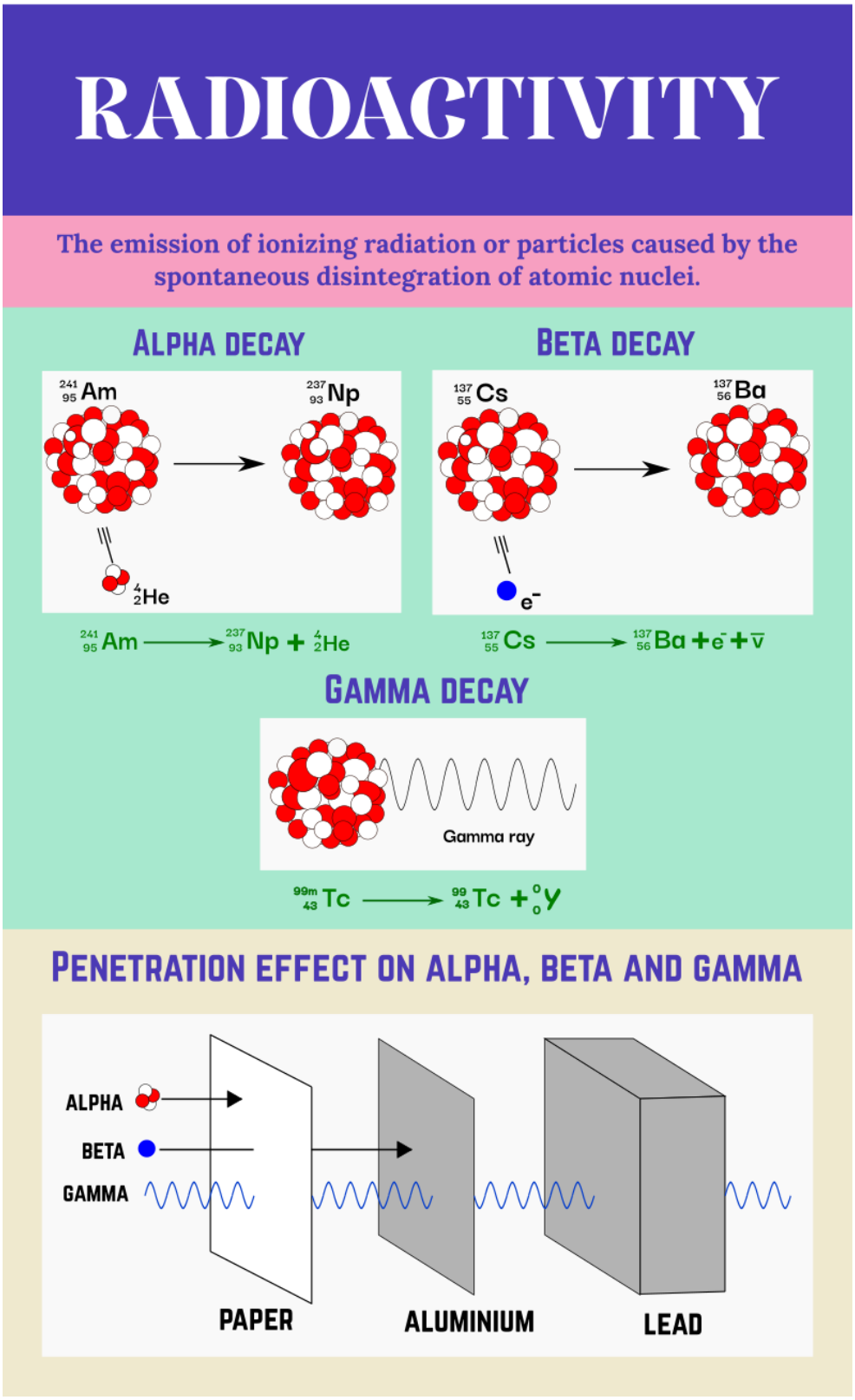
Artwork 9 - Polarization



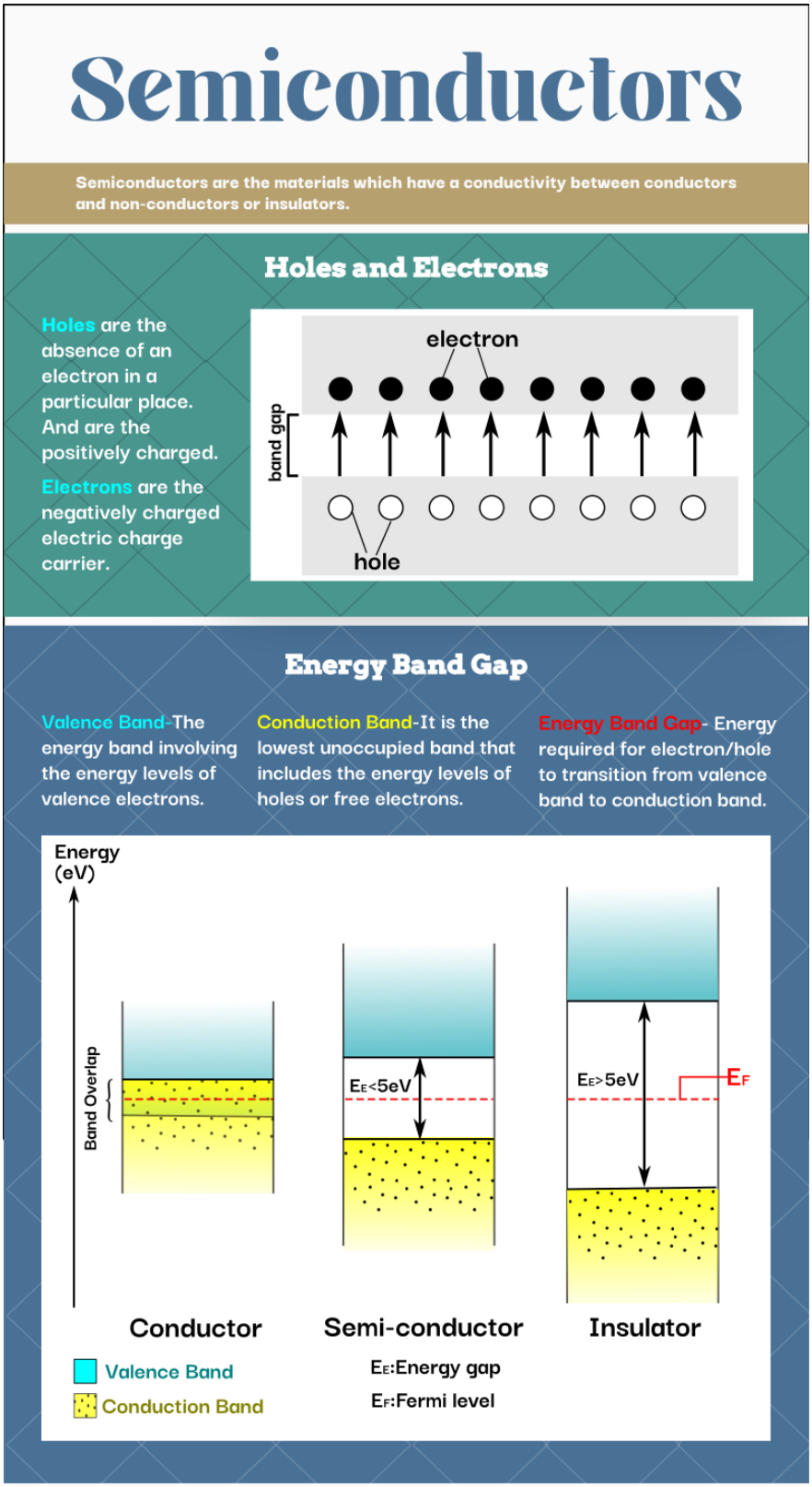
Artwork 10 - Huygen's Principle



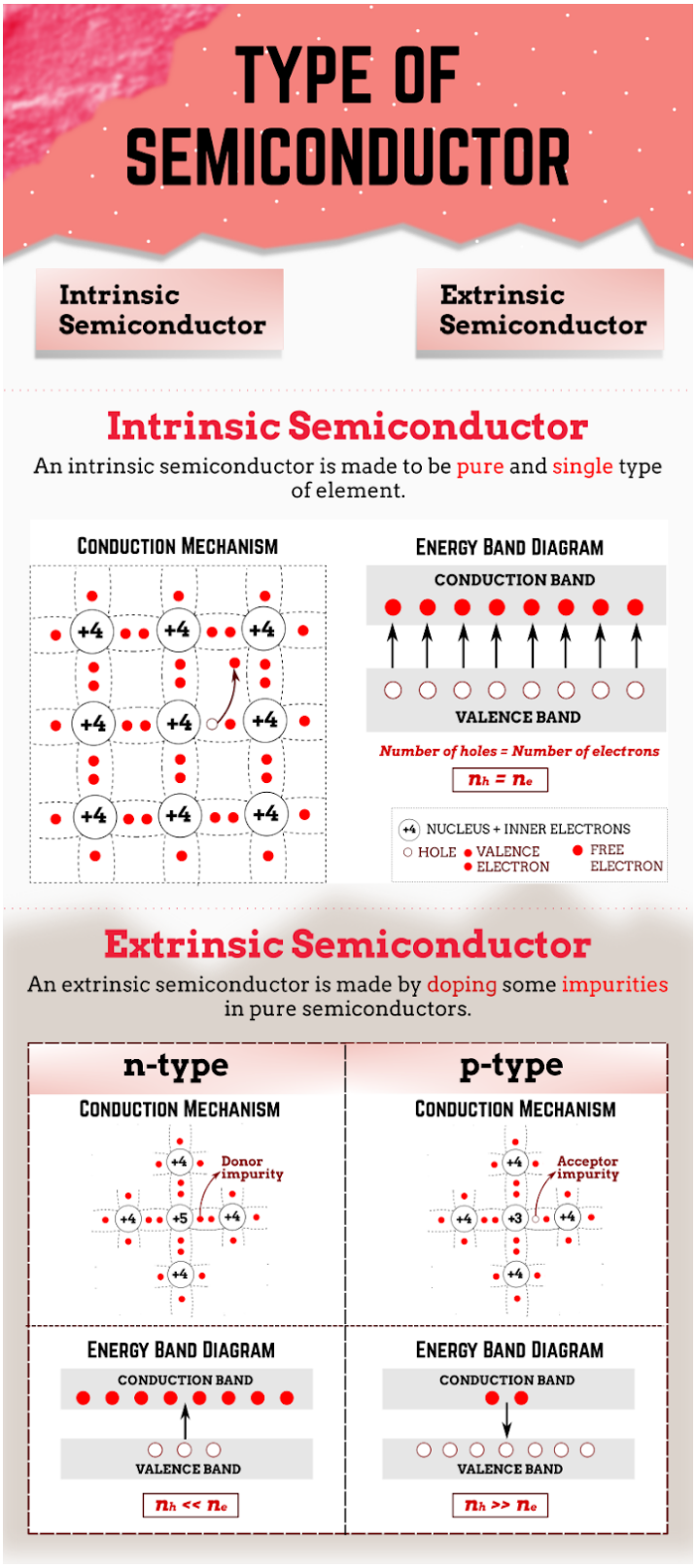
Artwork 11 - Radioactivity



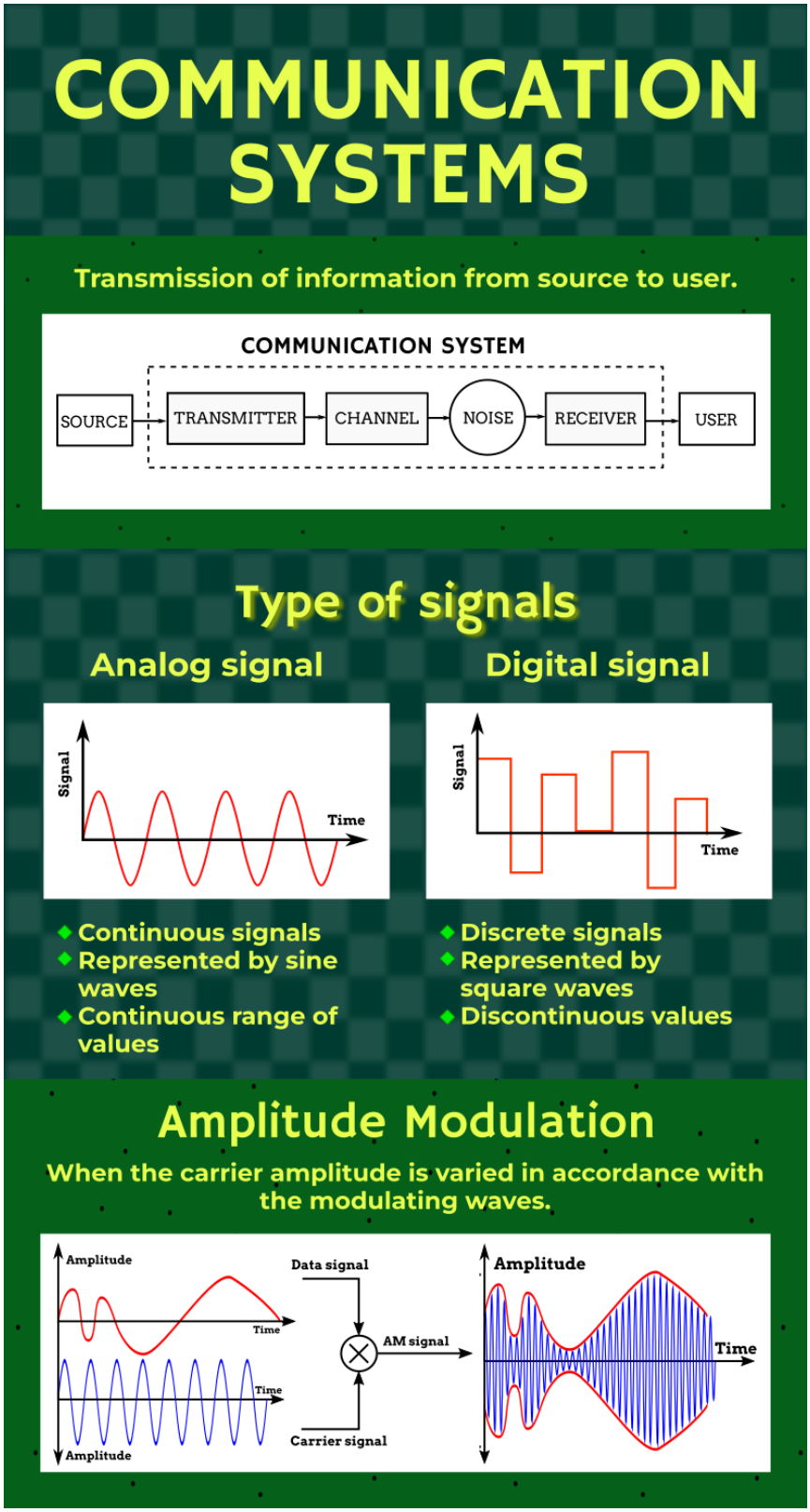
Artwork 12 - Semiconductor



Artwork 13 - Type of semiconductor



Artwork 14 - Communication system



Artwork 15 - NFT sale post

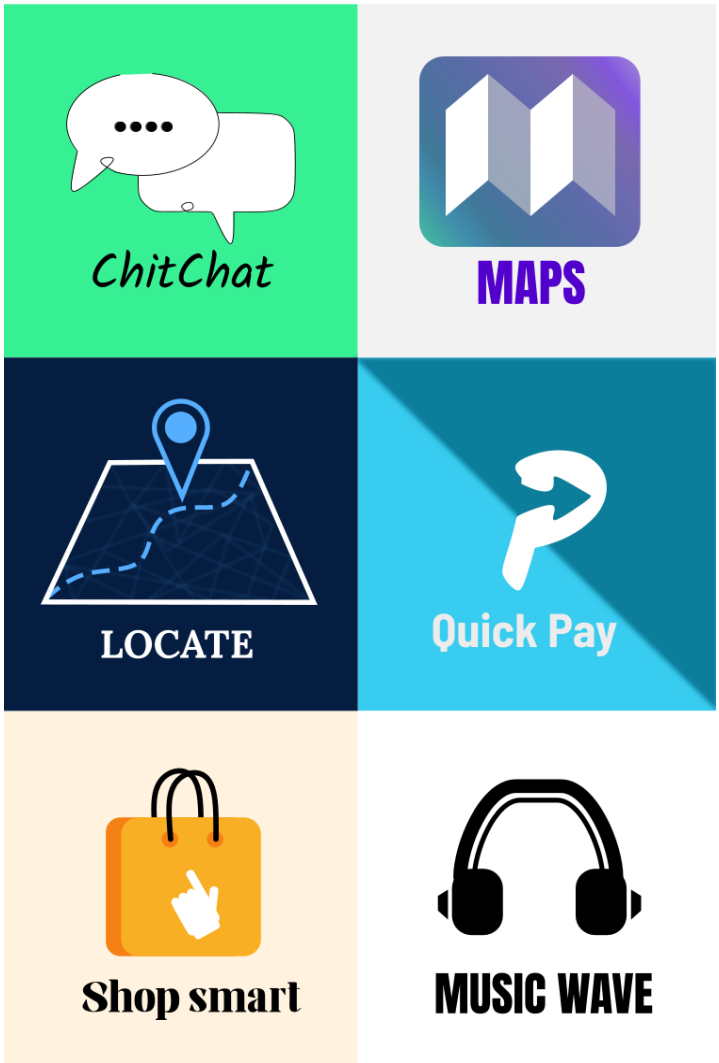
Artwork 16 - Social media post

Artwork 17 - Poster

Artwork 18 - Gender equality poster

Artwork 19 - Travel Brochure

Artwork 20 - Different App Icons



Personal Impact

This fellowship has helped me achieve diverse skills in graphic designing as well as gave me very useful insight into the capabilities of open source software alternatives, especially in graphic design. I also acquired talented designers from colleges across the country from whom I gained immense knowledge from their unique outlooks on design, art, and life. I came to know about the FOSSEE project in detail and working with them opened many career options.

References

Apart from the insights provided by my mentor and acquaintances, I took references from:

- Pinterest
- Wikipedia
- Google
- Other online sources like Khan Academy, etc.
- Books like NCERT XIIth Std. Physics, Nootan ISC XIIth Std. Physics.

THANK YOU