WRITING SUCCESSFUL MANUSCRIPTS FOR PHYSICAL REVIEW LETTERS

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PART 1 of 2

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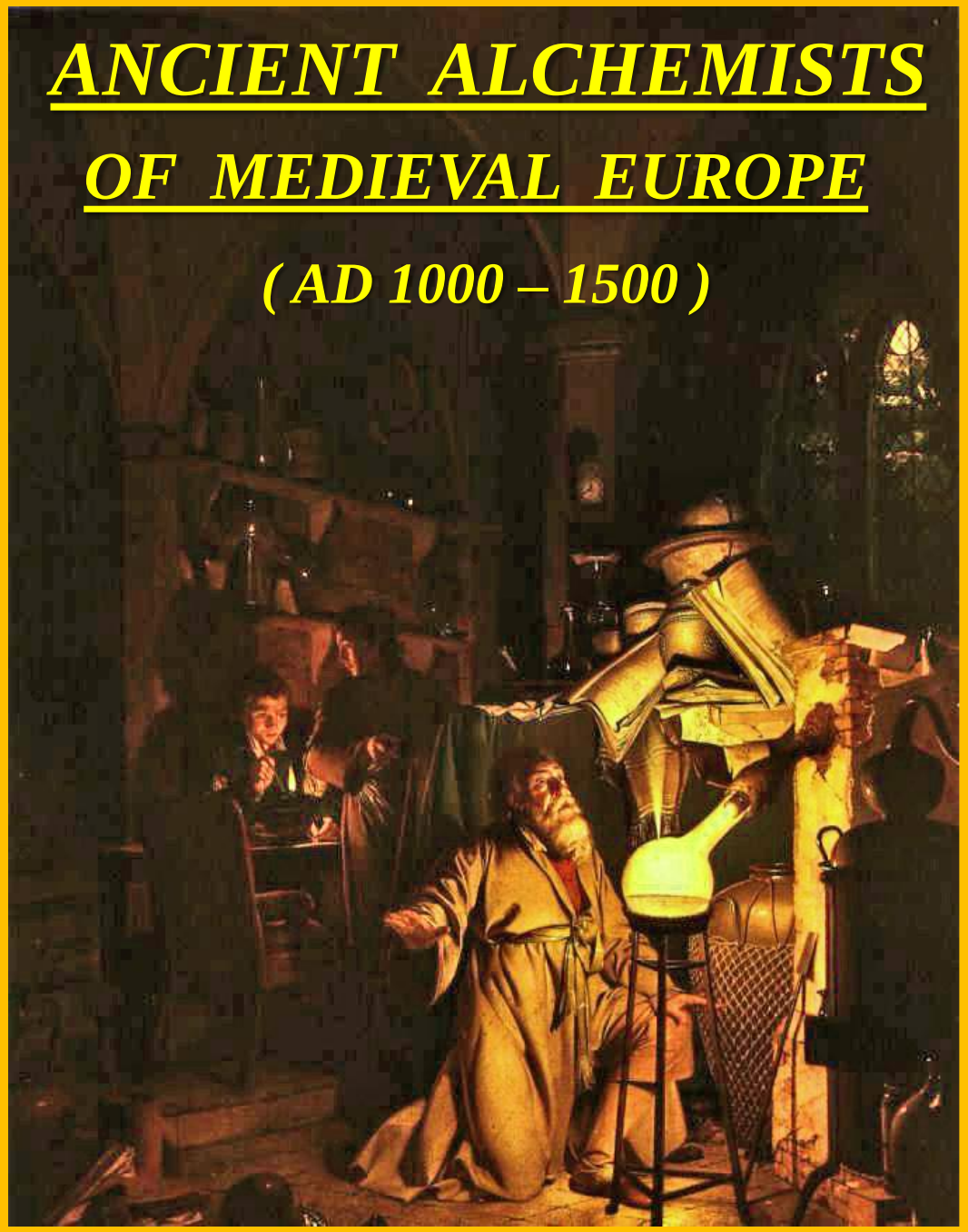
OUTLINE : *PART 1 of 2*

1. **HERITAGE OF ANCIENT ALCHEMISTS**
2. **GOAL OF PHYSICAL REVIEW LETTERS**
3. **ALCHEMIST BARRIER 1 : ABBREVIATIONS**
4. **ALCHEMIST BARRIER 2 : TERMINOLOGY**
5. **ALCHEMIST BARRIER 3 : ROUGH DRAFTS**

ANCIENT ALCHEMISTS OF MEDIEVAL EUROPE

(AD 1000 – 1500)



Painting of
“ *The Alchemist* “
By Joseph Wright
of Derby (1771)

ALCHEMISTS CREATED ELABORATE SYMBOLS

TO HIDE NEW RESULTS IN THEIR WRITINGS

A NEW RESEARCH RESULT IS TREASURE !

ALCHEMIST BARRIER 1

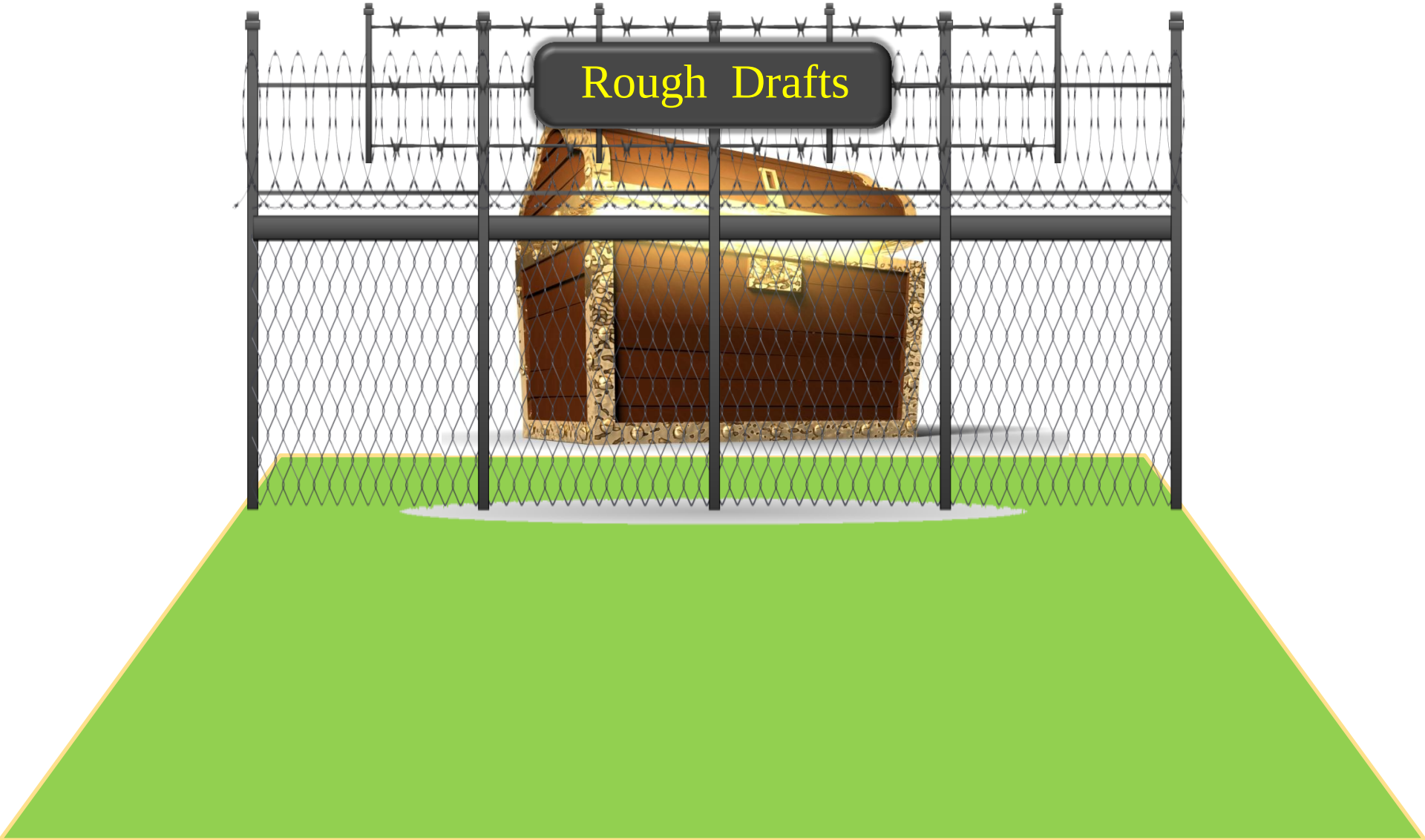
Acronyms &
Abbreviations

ALCHEMIST BARRIERS 1 + 2

ALCHEMIST BARRIERS 1 + 2 + 3

ALCHEMIST BARRIERS 2 + 3

ALCHEMIST BARRIER 3



AN ACCESSIBLE MANUSCRIPT IS TREASURE !

OUTLINE : *PART 1 of 2*

① **HERITAGE OF ANCIENT ALCHEMISTS**

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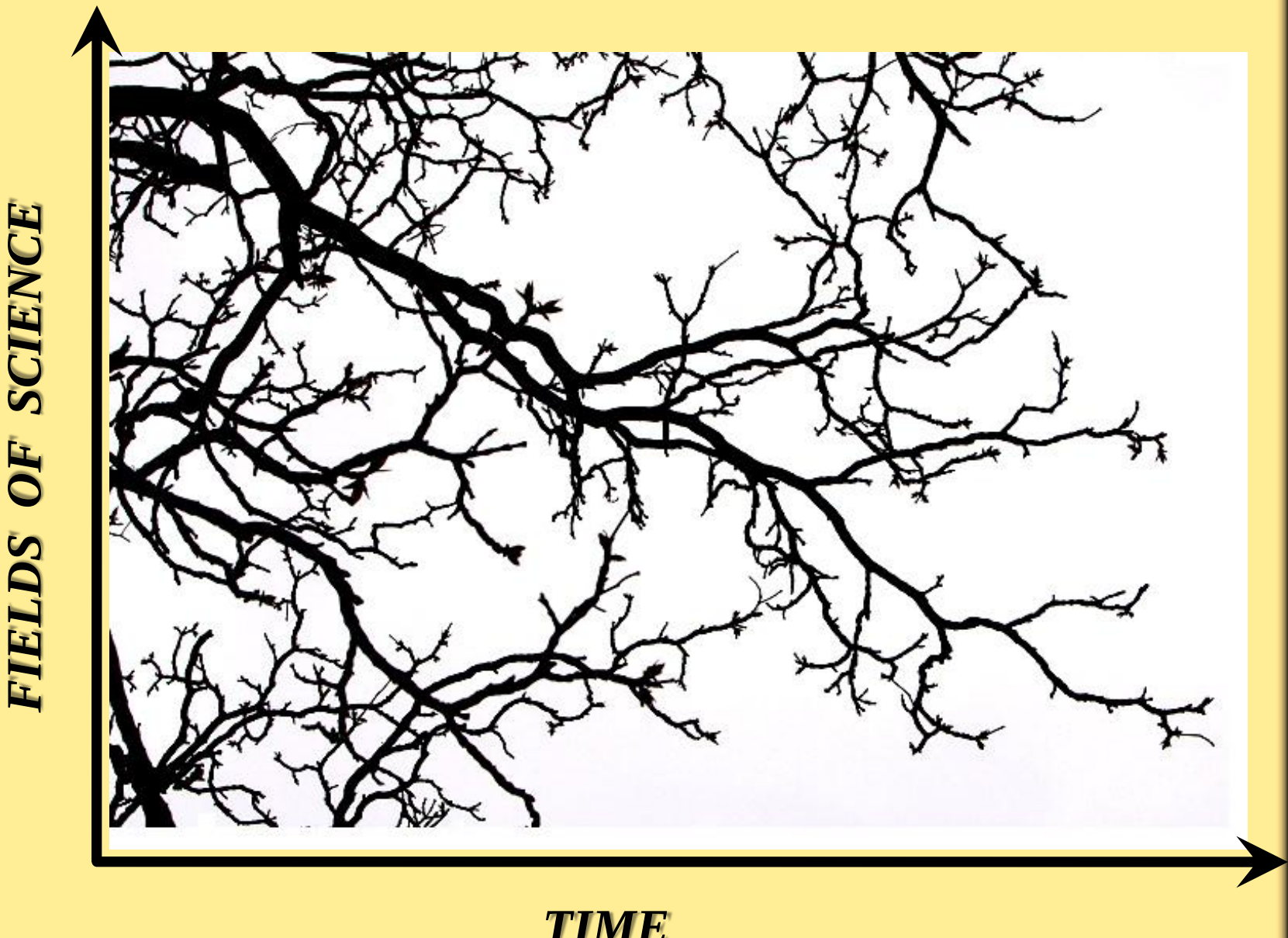
③ **ALCHEMIST BARRIER 1 : ABBREVIATIONS**

④ **ALCHEMIST BARRIER 2 : TERMINOLOGY**

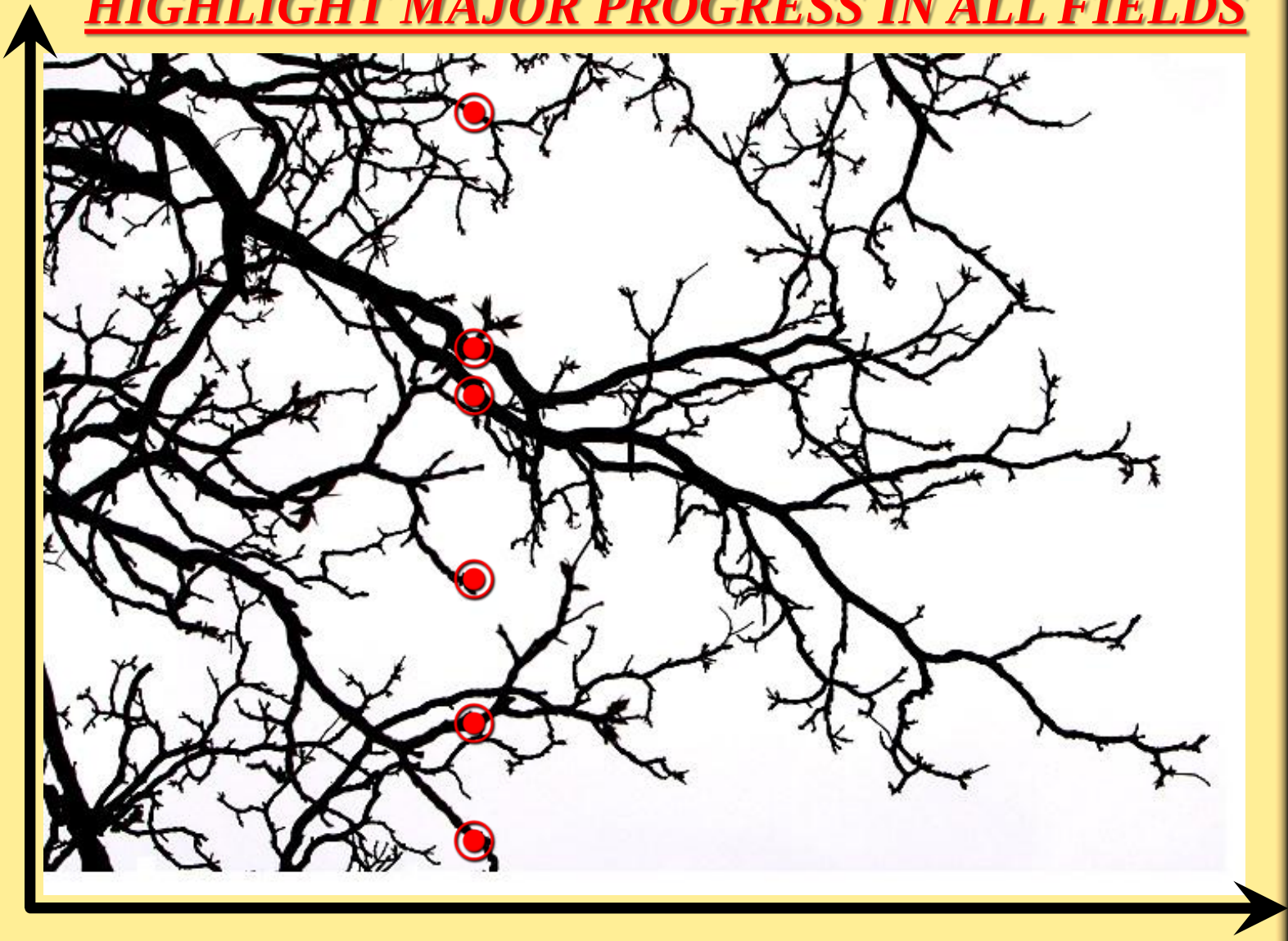
⑤ **ALCHEMIST BARRIER 3 : ROUGH DRAFTS**

EVOLUTIONARY TREE OF SCIENCE



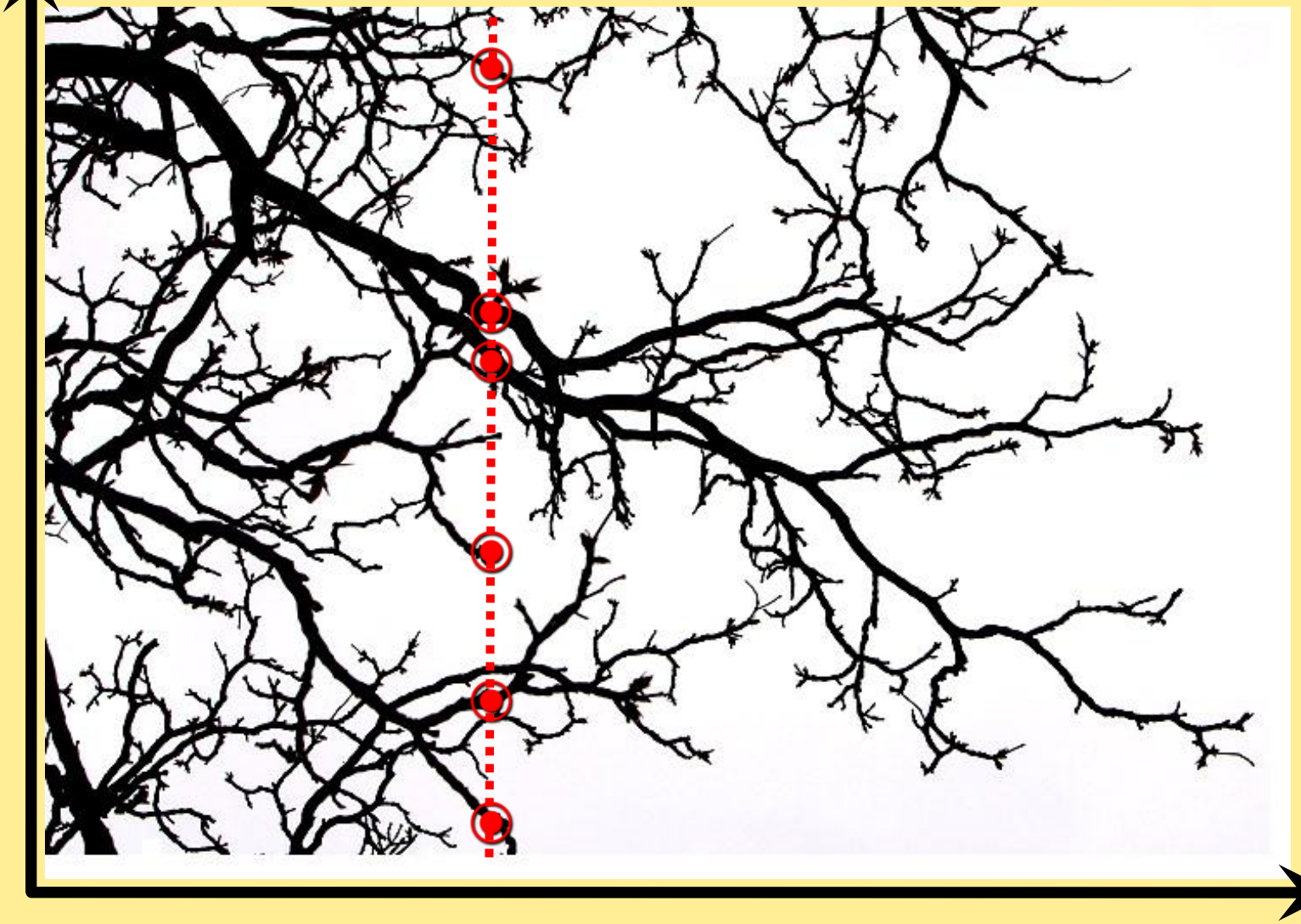
PRL GOALS & CRITERIA

HIGHLIGHT MAJOR PROGRESS IN ALL FIELDS



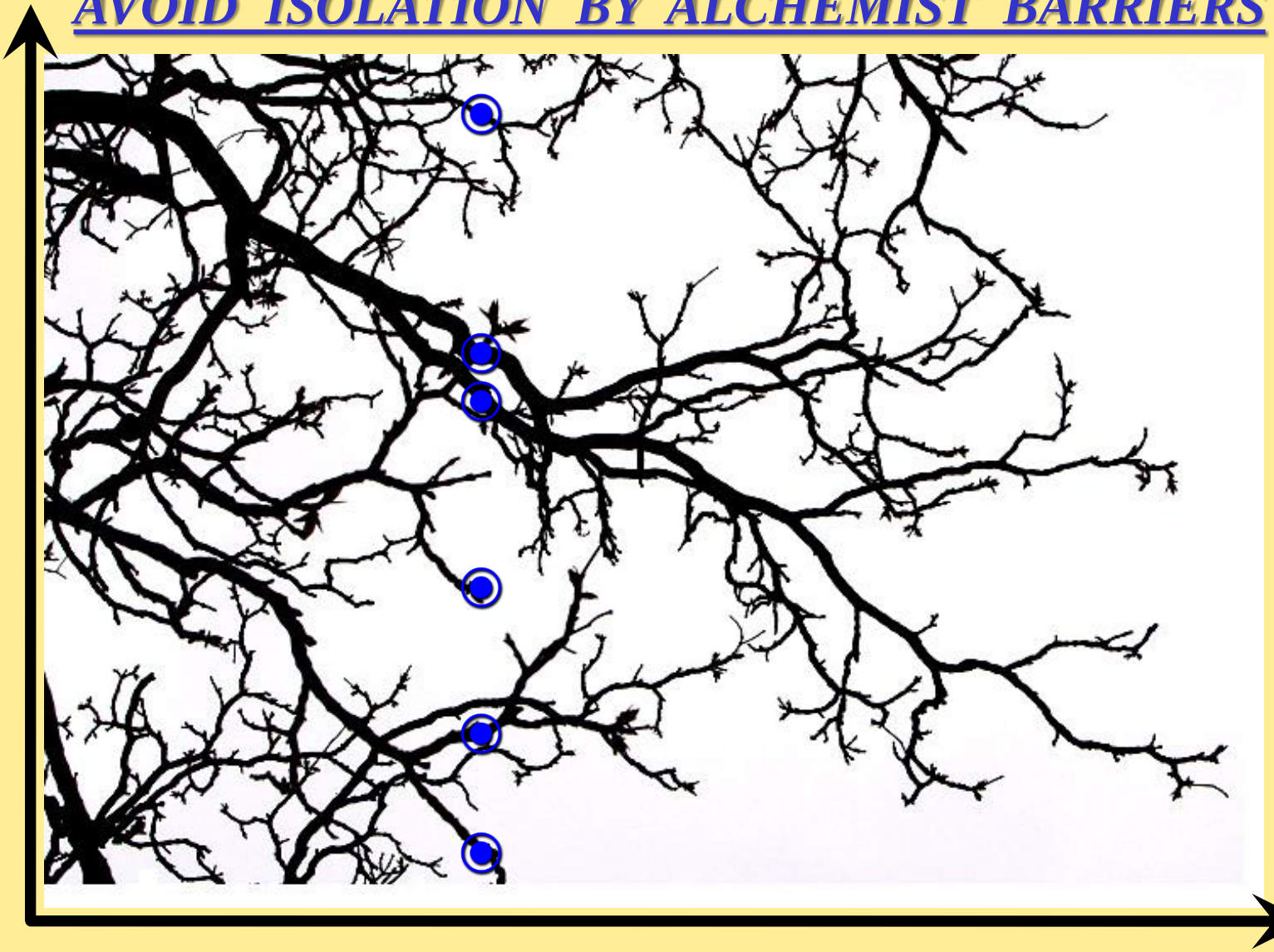
PRL GOALS & CRITERIA

ACHIEVE CROSS-FIELD FERTILIZATION



PRL GOALS & CRITERIA

AVOID ISOLATION BY ALCHEMIST BARRIERS



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ALCHEMIST BARRIER 1 :

ABBREVIATIONS & ACRONYMS

The measured PL spectra of a single one-micron-long SWCNT that encapsulates a chain-like agglomeration of colloidal ZnS QDs appear to be shifted with respect to PL spectra recorded for an empty SWCNT.

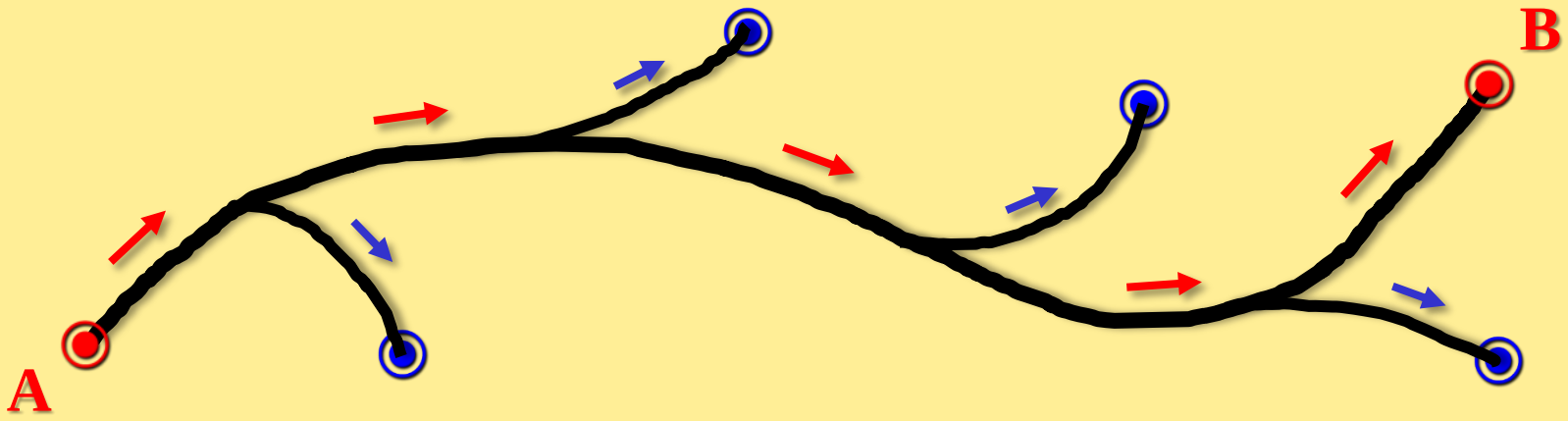
PL ≡ PhotoLuminescence

QD ≡ Quantum Dot

SWCNT ≡ Single – Wall Carbon NanoTube

PATH DIAGRAM OF A SENTENCE

The measured PL spectra of a single one-micron-long SWCNT that encapsulates a chain-like agglomeration of colloidal ZnS QDs appear to be shifted with respect to PL spectra recorded for an empty SWCNT.



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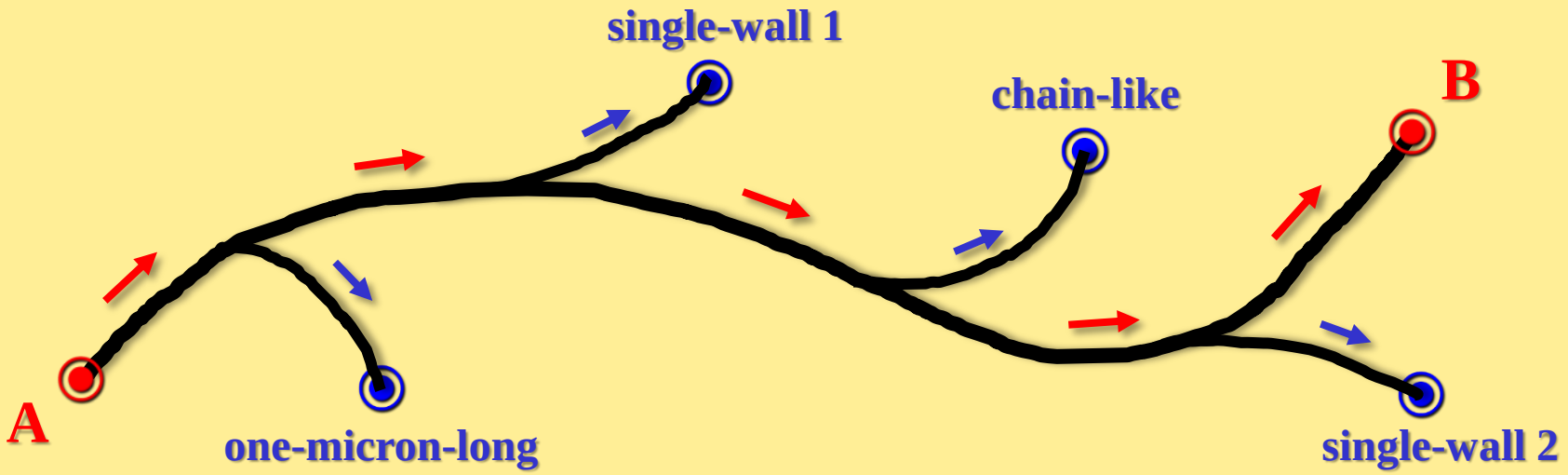

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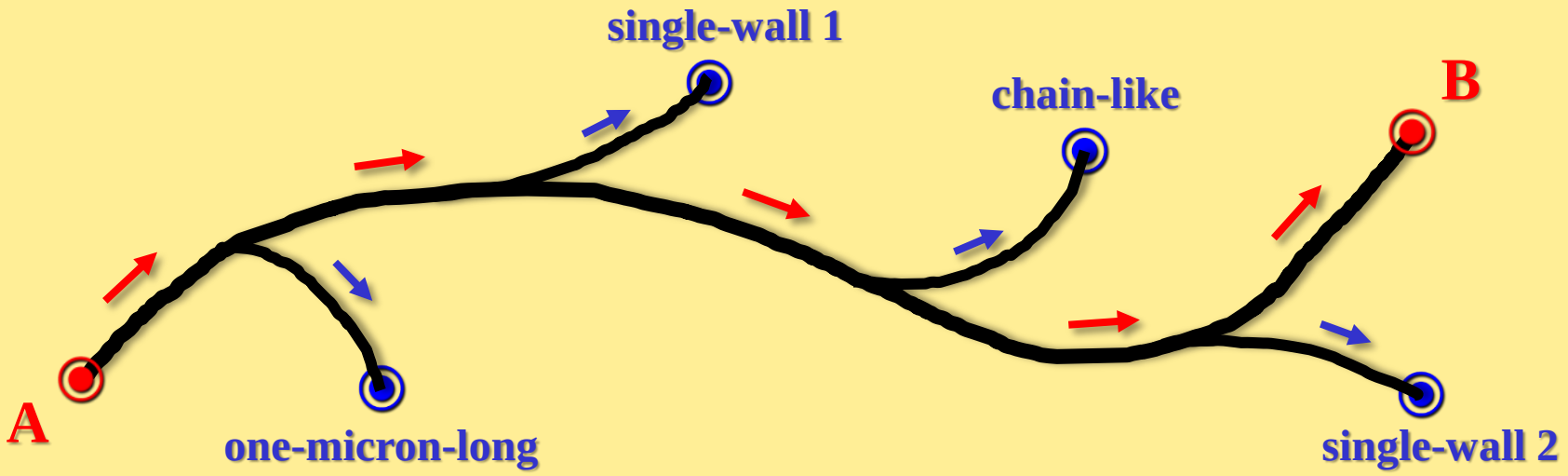
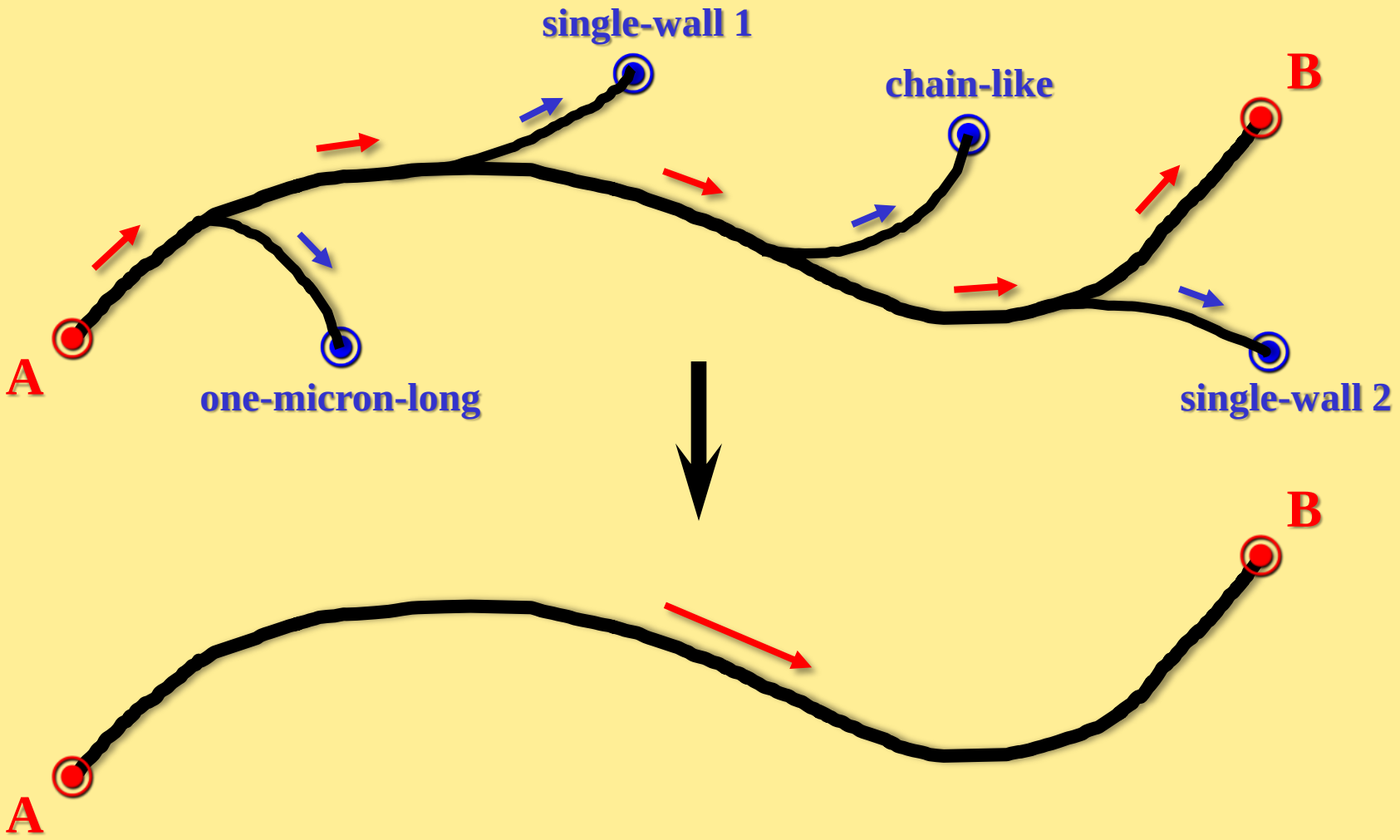


B = shifted photoluminescence spectra

SIMPLIFY THE PATH DIAGRAM BY REMOVING ALL SIDE BRANCHES



SIMPLIFY THE SENTENCE BY REMOVING ALL ABBREVIATIONS & SIDE INFORMATION

The measured PL spectra of a single one-micron-long SWCNT that encapsulates a chain-like agglomeration of colloidal ZnS QDs appear to be shifted with respect to PL spectra recorded for an empty SWCNT.

The measured photoluminescence spectra of an isolated carbon nanotube shift when it encapsulates colloidal ZnS quantum dots.

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④ **ALCHEMIST BARRIER 2 : TERMINOLOGY**

⑤ **ALCHEMIST BARRIER 3 : ROUGH DRAFTS**

ALCHEMIST BARRIER 2 :

AUTHOR – NAME TERMINOLOGY …

… hides the scientific meaning of effects, theories, etc., by shifting the focus onto discoverers & developers.

TWO EXAMPLES :

- **FARADAY EFFECT**

- **BARDEEN – COOPER – SCHRIEFFER THEORY**

ALCHEMIST BARRIER 2 :

AUTHOR – NAME TERMINOLOGY …

… can be replaced by a more direct scientific terminology that shifts the focus away from discoverers & developers.

TWO EXAMPLES :

- **FARADAY EFFECT**

  MAGNETO – OPTICAL EFFECT [1]

- **BARDEEN – COOPER – SCHRIEFFER THEORY**

  PHONON – MEDIATED ELECTRON PAIRING [1]

AUTHOR – NAME TERMINOLOGY : 001 - 050

001 - ADLER - BELL - JACKIW ANOMALY
002 - AHARONOV - BOHM EFFECT
003 - ANDERSON LOCALIZATION
004 - ANDREEV REFLECTION
005 - AUGER EFFECT
006 - BELOUSOV - ZHABOTINSKY REACTION
007 - BERRY PHASE
008 - BESSEL FUNCTION
009 - BOLTZMANN EQUATION
010 - BOSE - EINSTEIN CONDENSATE
011 - BROWNIAN MOTION
012 - CABIBBO – KOBAYASHI – MASKAWA MATRIX
013 - CHAPMAN - ENSKOG THEORY
014 - CHERN - SIMONS THEORY
015 - COTTON - MOUTON EFFECT
016 - CURIE TEMPERATURE
017 - DEBYE MODEL
018 - DE HAAS - VAN ALPHEN EFFECT
019 - DULONG - PETIT LAW
020 - EFROS - SHKLOVSKII MODEL
021 - FANO RESONANCE
022 - FERMI SURFACE
023 - FEYNMAN DIAGRAM
024 - FISK STEPS
025 - FULDE – FERRELL – LARKIN - OVCHINNIKOV PHASE
026 - GINZBURG - LANDAU MODEL
027 - GOOS - HANCHEN EFFECT
028 - GREENBERGER – HORNE – ZEILINGER STATE
029 - GROSS - PITAEVSKI EQUATION
030 - GUTZWILLER APPROXIMATION
031 - HAGEN - POISEUILLE FLOW
032 - HALDANE GAP
033 - HALL EFFECT
034 - HASEGAWA - MIMA EQUATION
035 - HEBEL - SLICHTER EFFECT
036 - HEISENBERG PRINCIPLE
037 - HELMHOLTZ OSCILLATOR
038 - HERTZSPRUNG - RUSSELL DIAGRAM
039 - HIGGS BOSON
040 - HUBBARD MODEL
041 - HUBBLE CONSTANT
042 - HUND'S RULE
043 - ISING MODEL
044 - JAHN - TELLER EFFECT
045 - JOSEPHSON JUNCTION
046 - KAUZMANN PARADOX
047 - KLEIN - GORDON EQUATION
048 - KOCHEN - SPECKER THEOREM
049 - KOSTERLITZ - THOULESS TRANSITION
050 - KRETSCHMANN - RAETHER CONFIGURATION

AUTHOR – NAME TERMINOLOGY : 051 - 100

051 - LAMB SHIFT
052 - LANDAU – LIFSHITZ - GILBERT EQUATION
053 - LAPLACE EQUATION
054 - LAUGHLIN STATE
055 - LEGENDRE POLYNOMIAL
056 - LEGGETT MODE
057 - LITTLE – PARKS - DE GENNES EFFECT
058 - LUTTINGER LIQUID
059 - LYAPUNOV EXPONENT
060 - MAJORANA FERMION
061 - MARANGONI EFFECT
062 - MAXWELL EQUATIONS
063 - MIE SCATTERING
064 - MOTT INSULATOR
065 - NAMBU SPACE
066 - NERNST EFFECT
067 - NEEL TEMPERATURE
068 - OBERBECK – BOUSSINESQ APPROXIMATION
069 - PERCUS – YEVICK APPROXIMATION
070 - PLANCK'S LAW
071 - POISSON EQUATION
072 - RABI OSCILLATIONS
073 - RAMAN SPECTROSCOPY
074 - RAYLEIGH SCATTERING
075 - REYNOLDS NUMBER
076 - RICHARDSON – GAUDIN EQUATIONS
077 - RUDERMAN – KITTEL – KASUYA – YOSIDA INTERACTION
078 - SAFFMAN – DELBRUCK THEORY
079 - SAFFMAN – TAYLOR INSTABILITY
080 - SCHROEDINGER EQUATION
081 - SCHWINGER EFFECT
082 - SEEBECK EFFECT
083 - SHANNON ENTROPY
084 - SHAPIRO STEPS
085 - STARK EFFECT
086 - STONE – WALES DEFECT
087 - TAYLOR – COUETTE FLOW
088 - THOMAS – REICHE – KUHN SUM RULE
089 - TONKS – DATTNER RESONANCE
090 - TRUGMAN – KIVELSON HAMILTONIAN
091 - VOGEL – FULCHER LAW
092 - VOLOVIK EFFECT
093 - WENTZEL – KRAMERS – BRILLOUIN APPROXIMATION
094 - WESS – ZUMINO – WITTEN MODEL
095 - WIGNER LATTICE
096 - WULFF CONSTRUCTION
097 - YANG – MILLS THEORY
098 - YUKAWA POTENTIAL
099 - ZEEMAN EFFECT
100 - ZHANG – RICE SINGLET

OUTLINE : *PART 1 of 2*

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② **GOAL OF PHYSICAL REVIEW LETTERS**

③ **ALCHEMIST BARRIER 1 : ABBREVIATIONS**

④ **ALCHEMIST BARRIER 2 : TERMINOLOGY**

⑤ **ALCHEMIST BARRIER 3 : ROUGH DRAFTS**

ALCHEMIST BARRIER 3 : ROUGH DRAFTS

ROUGH DRAFT = **Premature manuscript whose internal parts are inconsistent with one another.**

POLISHED DRAFT = **Mature manuscript whose internal parts are consistent with one another.**

ROUGH DRAFT + WORK → POLISHED DRAFT

ALCHEMIST BARRIER 3 : ROUGH DRAFTS

A desirable sentence can change its meaning in a rough draft.

… We take advantage of this window of opportunity to extract the desired results. …

ALCHEMIST BARRIER 3 : ROUGH DRAFTS

A typo can cause a LARGE CHANGE in the intended meaning.

… We take advantage of this window of opportunity to extract the desired results. …

+

TYPO

… We take advantage of this widow of opportunity to extract the desired results. …

ALCHEMIST BARRIER 3 : ROUGH DRAFTS

A typo can cause a SUBTLE CHANGE in the intended meaning.

… We conclude that model parameters exert a significant influence on the selected mode for the propagation of electromagnetic waves inside the waveguide. …

+

TYPO

… We conclude that mode parameters exert a significant influence on the selected model for the propagation of electromagnetic waves inside the waveguide. …

INTRODUCTION

FOR LETTERS

Consists of three crucial parts …

BACKGROUND or SURVEY

PHYSICAL MOTIVATION

IN THIS LETTER (Contribution)

… that form a single coherent story.

MECHANICAL STRUCTURE OF A LETTER

TITLE

ABSTRACT

INTRODUCTION

FIGURES

MAIN TEXT

EQUATIONS

CONCLUSION

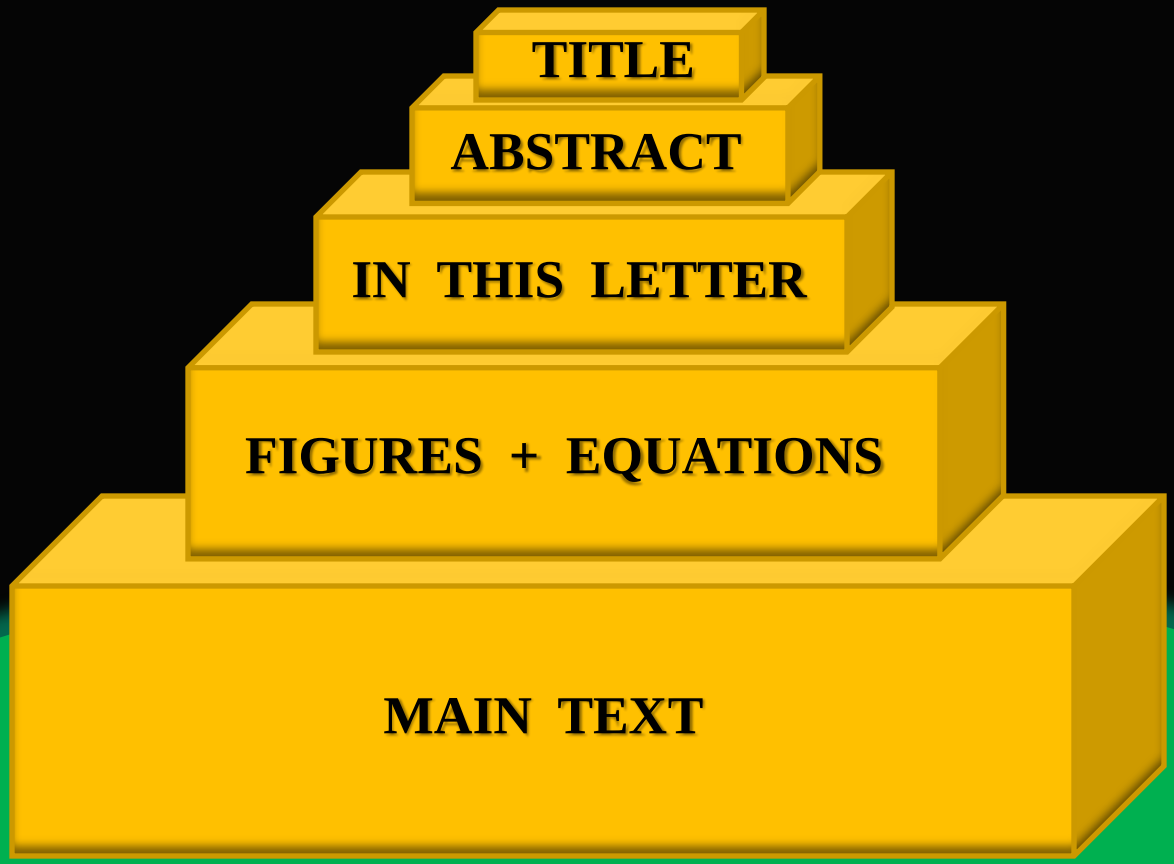
REFERENCES

SELF – SIMILARITY

TWO FEATURES :

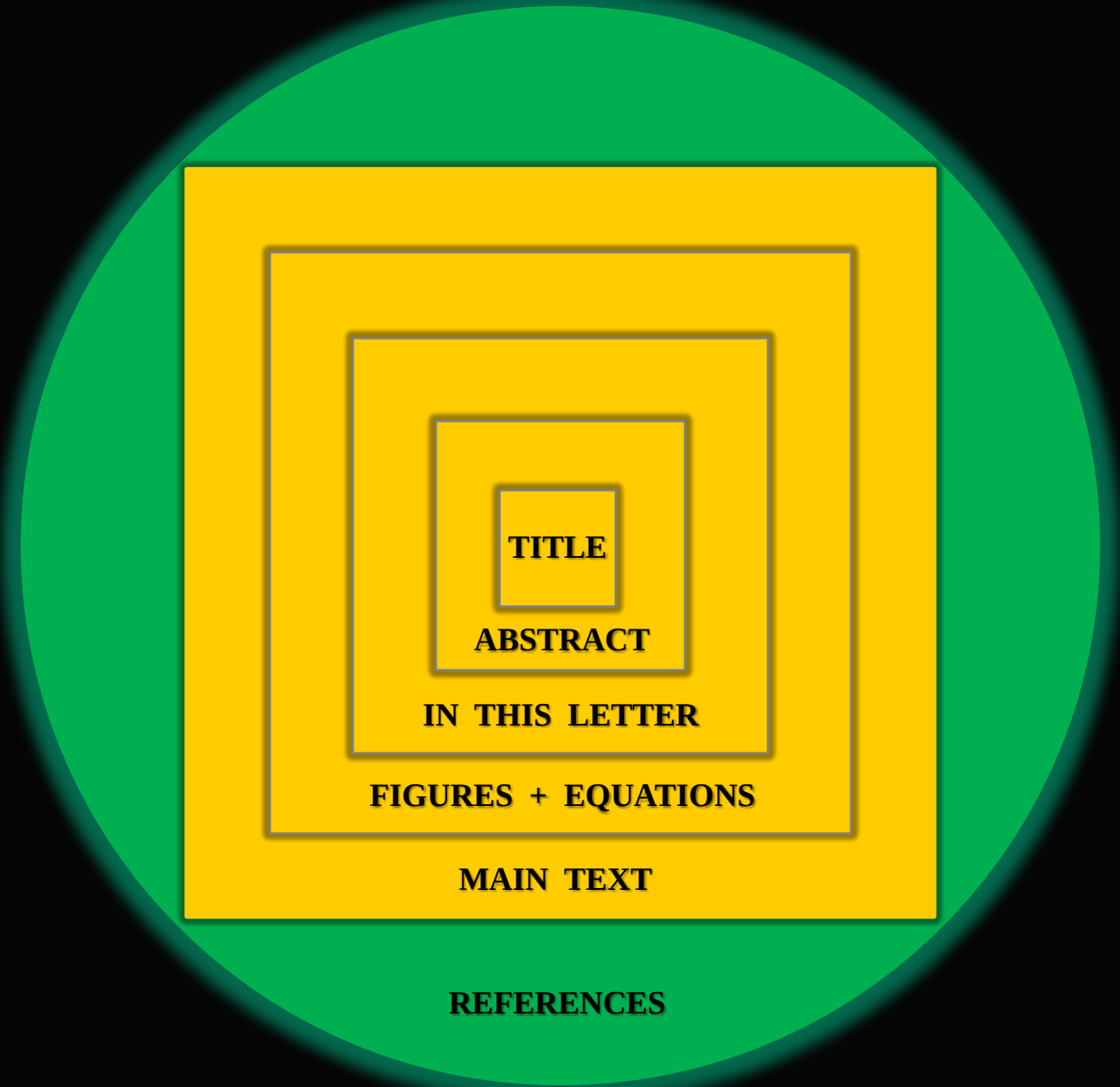
- Conserves the same shape (or result) at different scales.
- Allows more complex texture (or detail) at larger scales.

3D SELF - SIMILAR STRUCTURE OF A POLISHED DRAFT

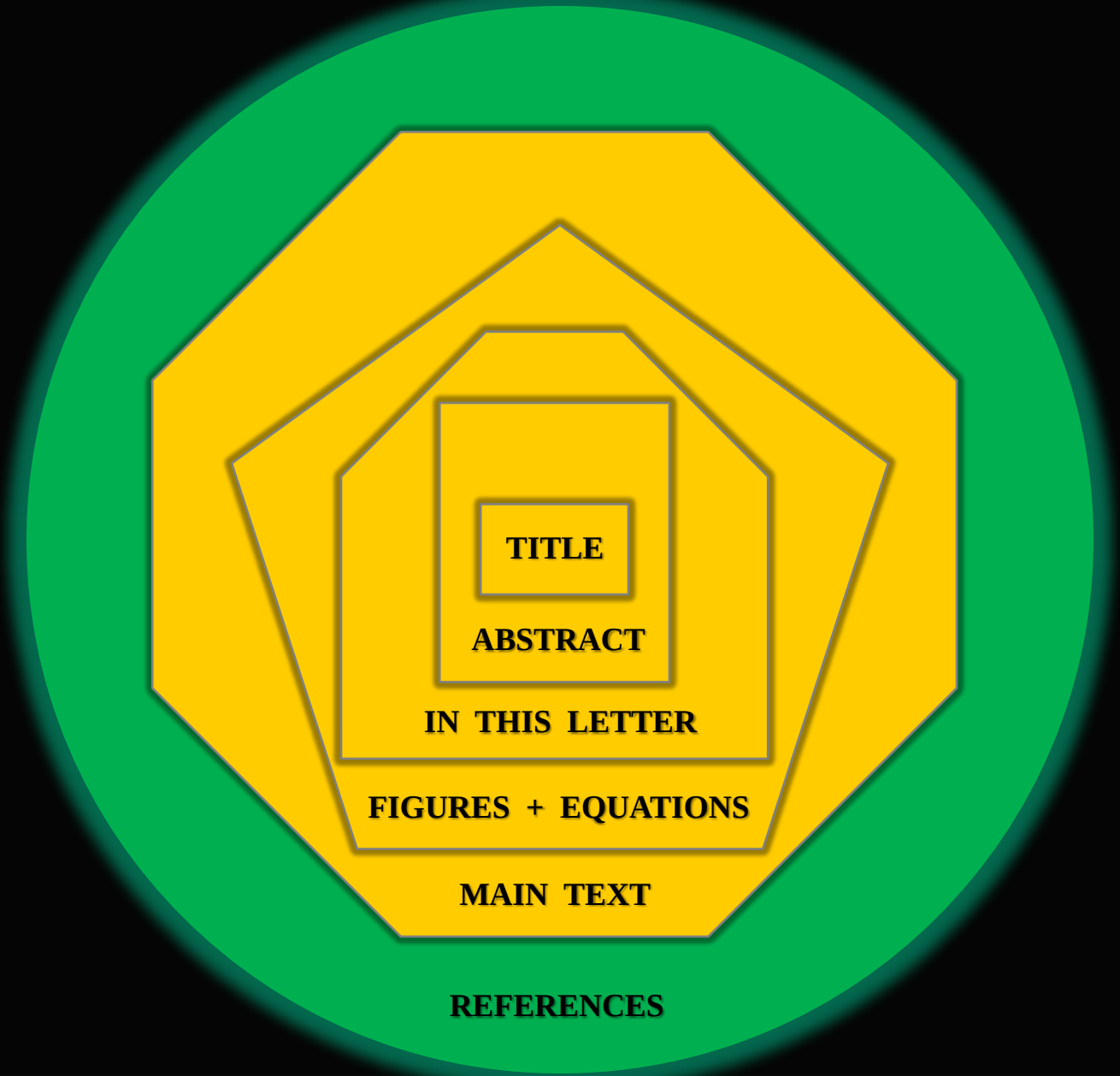


REFERENCES

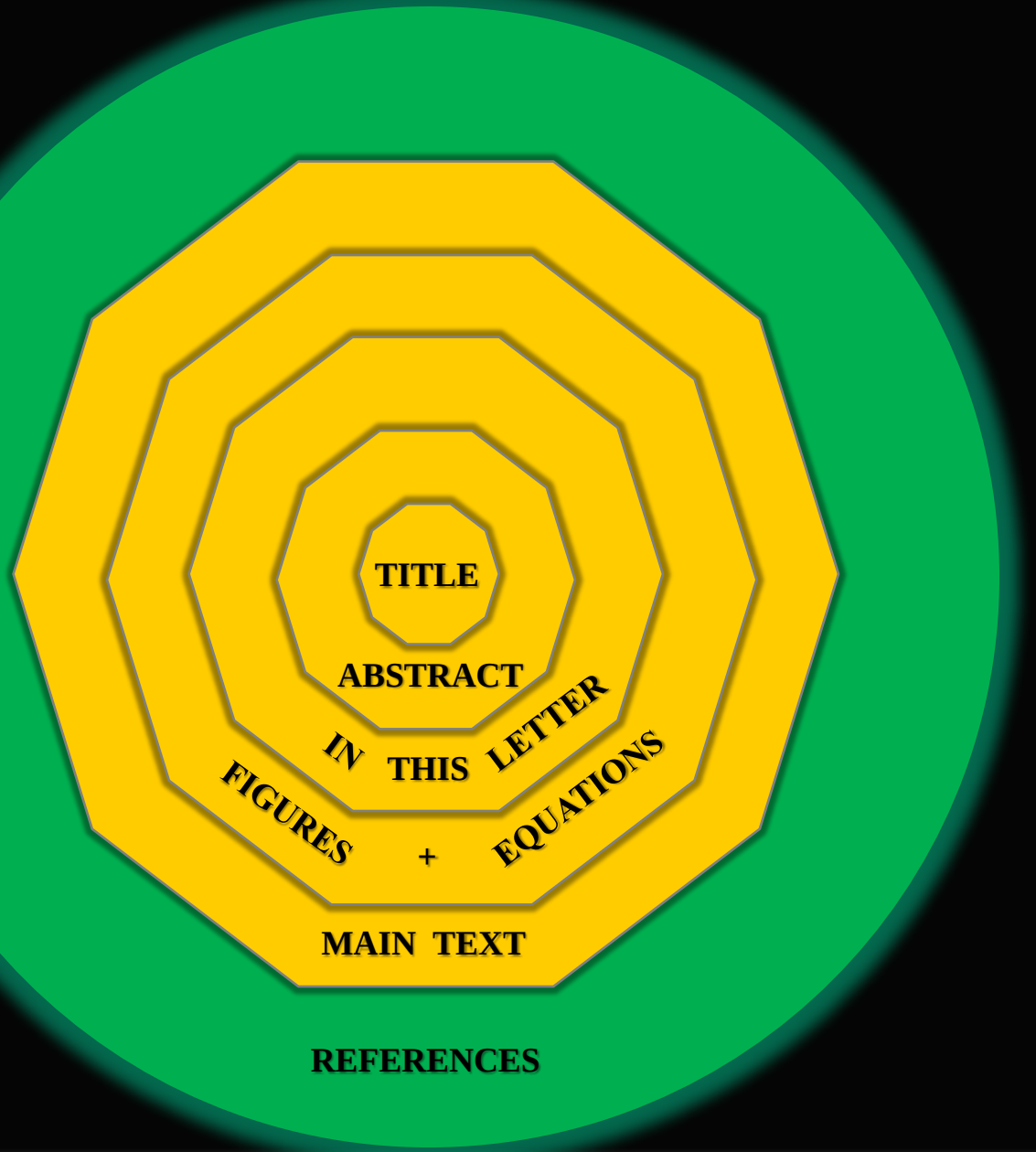
2D SELF - SIMILAR STRUCTURE OF A POLISHED DRAFT



IRREGULAR 2D STRUCTURE OF A ROUGH DRAFT

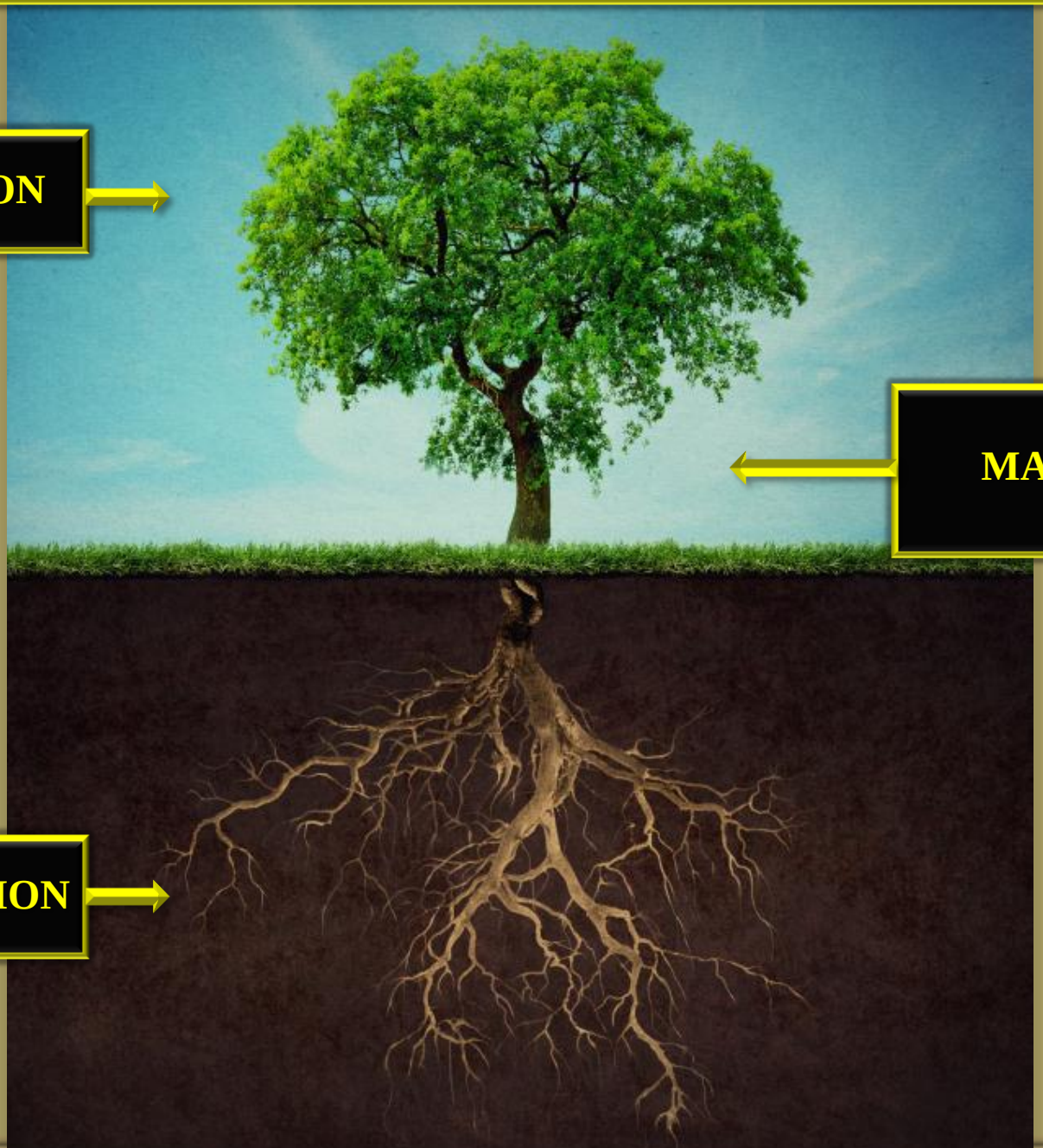


2D SELF - SIMILAR STRUCTURE OF A MARGINAL LETTER



2D NETWORK MODEL OF INTRODUCTION & CONCLUSION

TREE MODEL OF A SUCCESSFUL LETTER

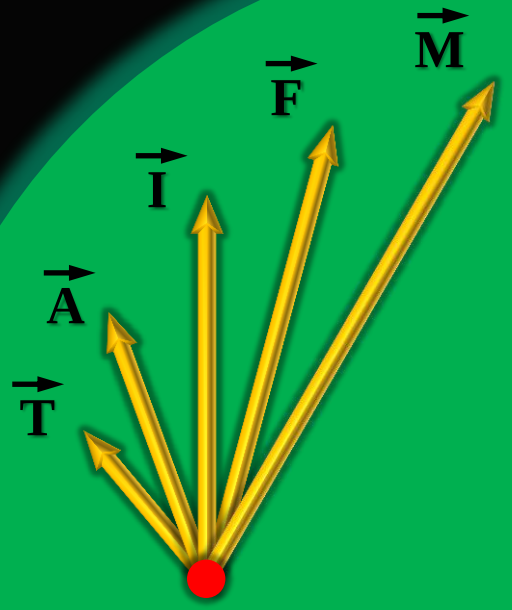


CONCLUSION

MAIN TEXT

INTRODUCTION

2D VECTOR MODEL OF ROUGH & POLISHED DRAFTS



ROUGH DRAFT

POLISHED DRAFT

$\vec{T}$ ≡ TITLE

$\vec{A}$ ≡ ABSTRACT

$\vec{I}$ ≡ IN THIS LETTER

$\vec{F}$ ≡ FIGURES + EQUATIONS

$\vec{M}$ ≡ MAIN TEXT

WORD CLOUD TEST FOR MANUSCRIPTS

Dominant words distinguish STRONG LETTERS from WEAK LETTERS

WORD CLOUDS WEBSITE : www.wordle.net

SUMMARY : PART 1 of 2

① **HERITAGE OF ANCIENT ALCHEMISTS**

Use elaborate symbols & constructions to hide results in manuscripts.

② **GOAL OF PHYSICAL REVIEW LETTERS**

Highlight major progress in all fields & achieve cross-field fertilization.

③ **ALCHEMIST BARRIER 1 : ABBREVIATIONS**

Use path diagrams to write concise sentences without abbreviations.

④ **ALCHEMIST BARRIER 2 : TERMINOLOGY**

Replace author-name terminology with a science-based terminology.

⑤ **ALCHEMIST BARRIER 3 : ROUGH DRAFTS**

Use self-similarity to transform rough drafts into polished manuscripts.

ACKNOWLEDGEMENTS

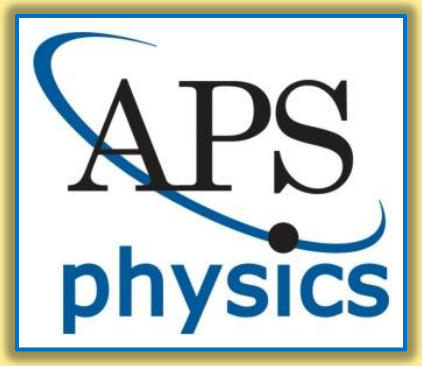
① **LANCE COOPER**

② **AUTHORS**

③ **REFEREES**

④ **READERS**

⑤



MAIN MATERIAL SOURCES

① **WIKIPEDIA :**

en.wikipedia.org/wiki/Alchemist

② **I STOCK PHOTO :**

www.istockphoto.com

③ **WORD CLOUDS :**

www.wordle.net

④ **CLIP ART :**

www.clipart.com