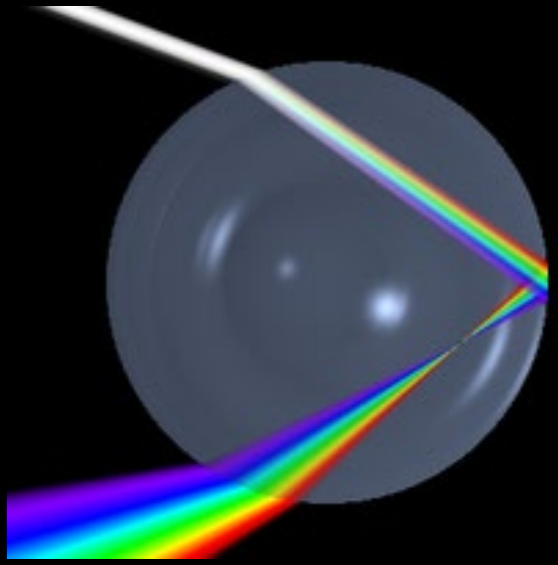
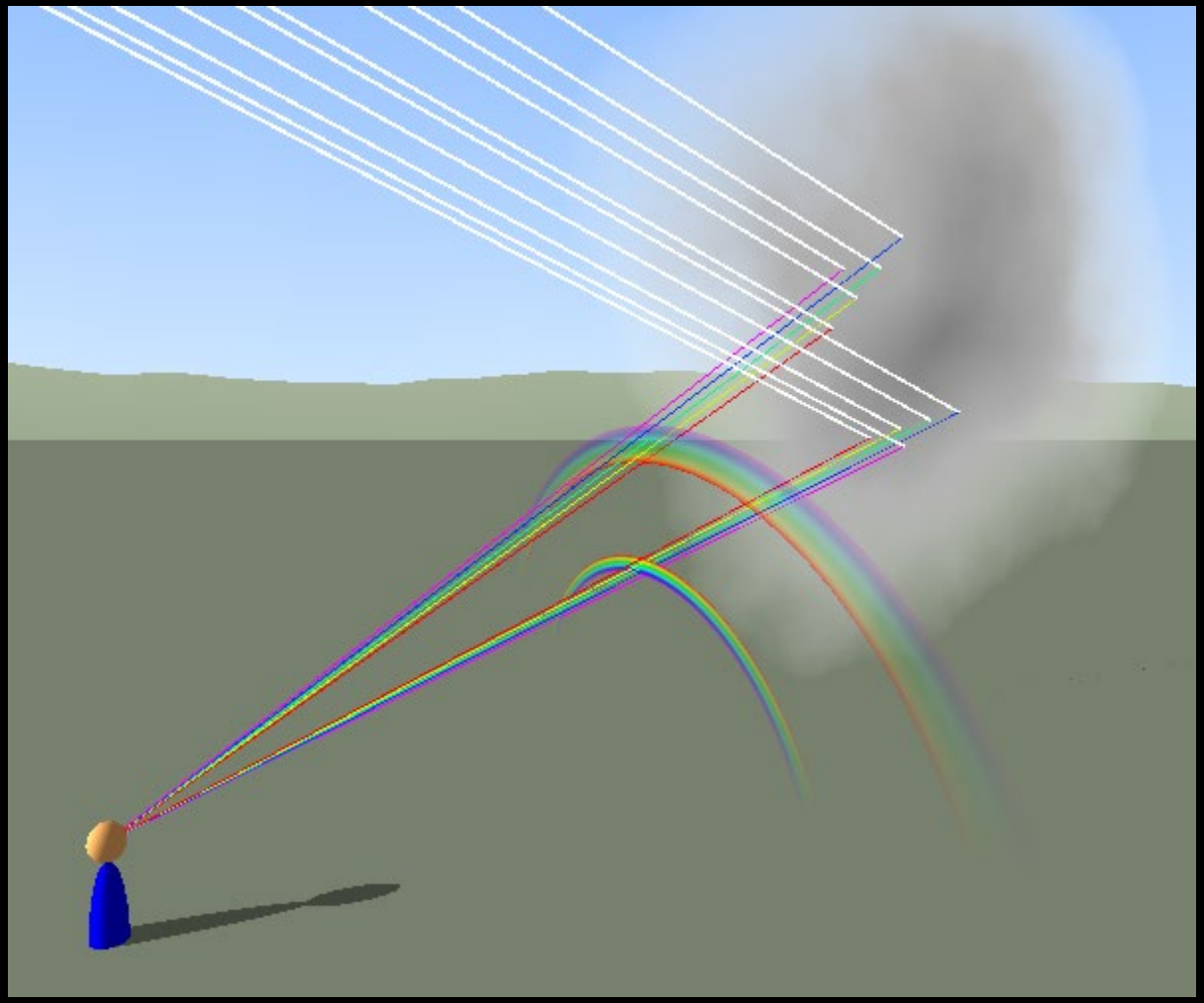
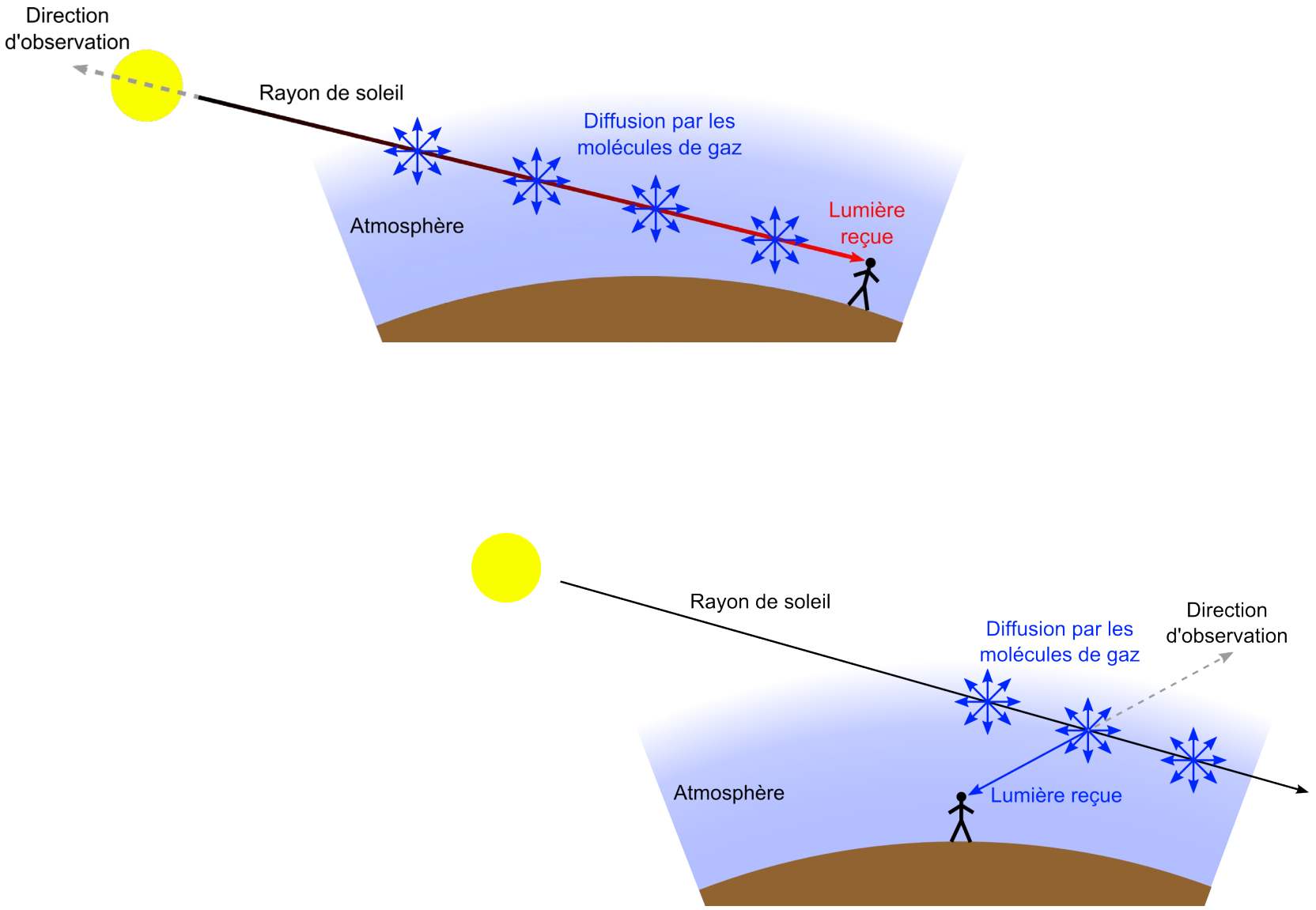
Physique du Bâtiment II
Phénoménologie

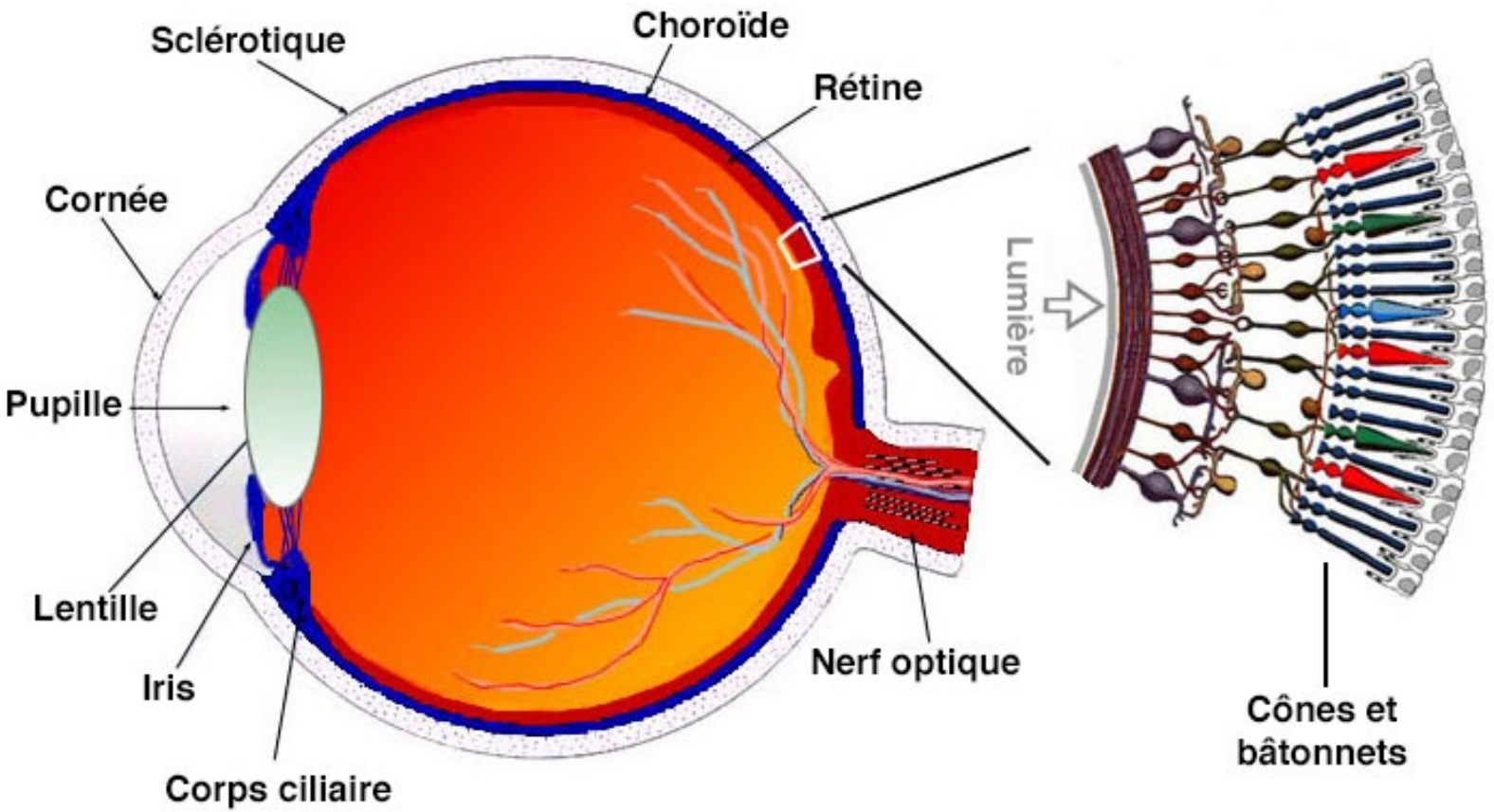
Chapitre 4.4	Rayonnement
Chapitre 9	Photométrie
(Ch 1)	Propagation de la lumière
Chapitre 10	Colorimétrie
(Ch 2)	Perception des couleurs
	Diagramme chromatique
Chapitre 6	Propriétés des ondes sonores
	Superposition des ondes
	Propagation du son
	Acoustique géométrique
	ondulatoire
	statistique

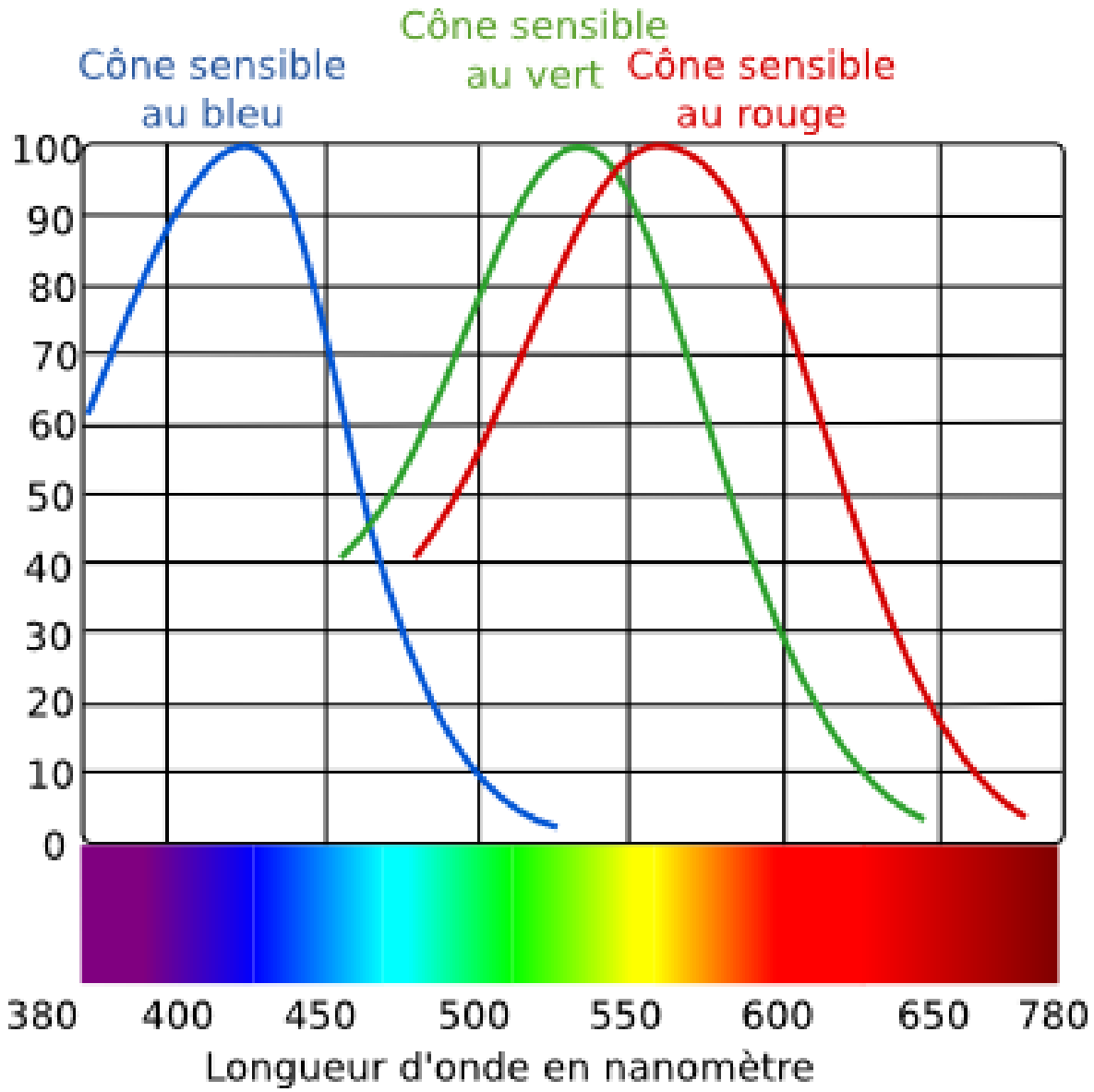
EPFL

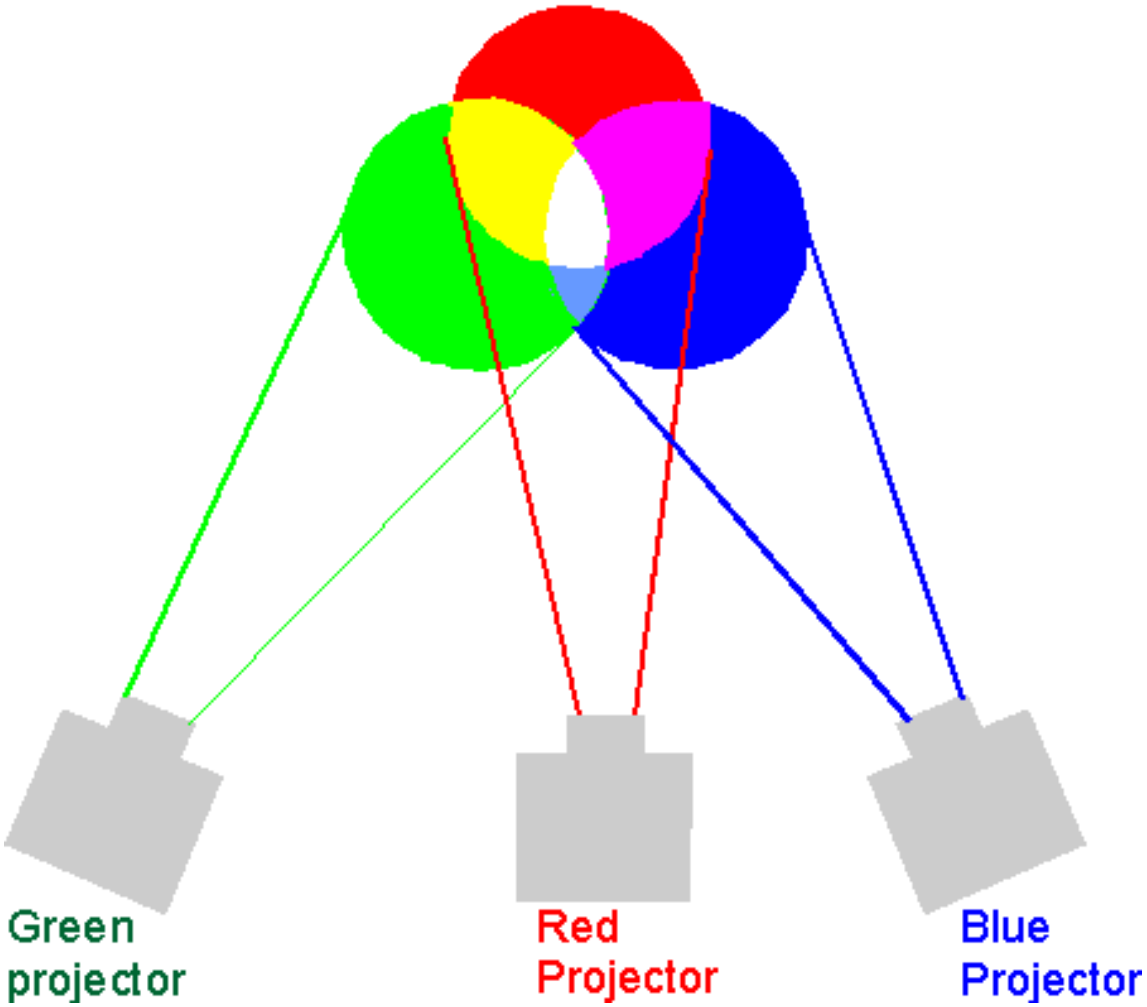




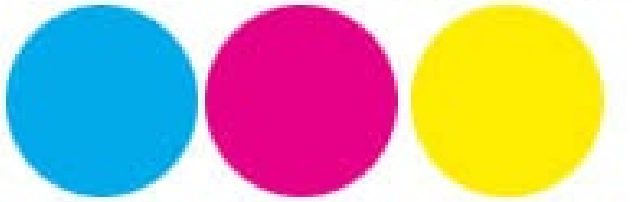

Direction
d'observation
Rayon de soleil
Diffusion par les
molécules de gaz
Atmosphère
Lumière
reçue
Rayon de soleil
Direction
d'observation
Diffusion par les
molécules de gaz
Atmosphère
Lumière reçue


Sclérotique
Choroïde
Rétine
Cornée
Pupille
Lentille
Iris
Corps ciliaire
Nerf optique
Lumière
Cônes et
bâtonnets

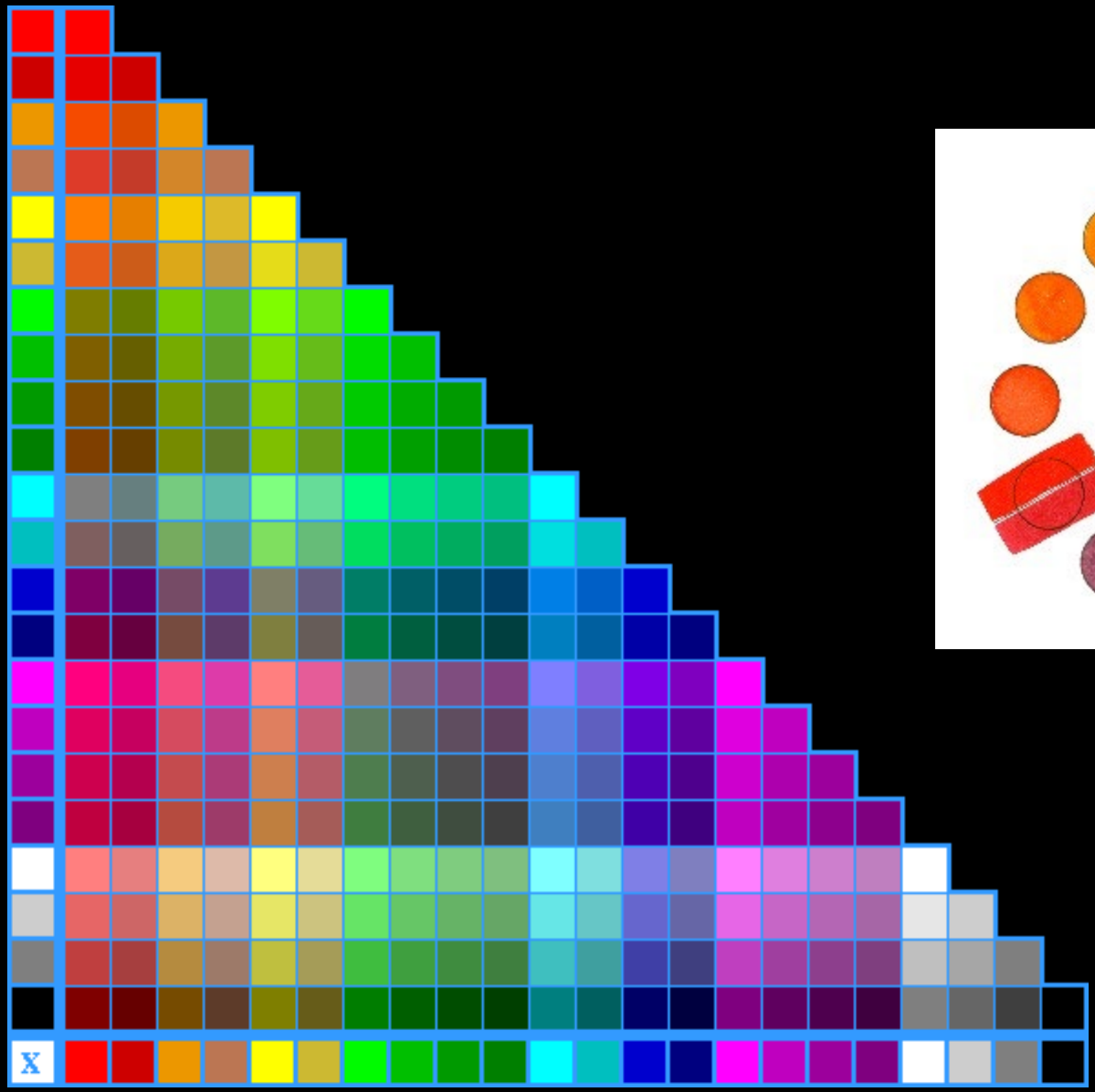

Cône sensible
au bleu
Cône sensible
au vert
Cône sensible
au rouge
100
90
80
70
60
50
40
30
20
10
0
380
400
450
500
550
600
650
780
Longueur d'onde en nanomètre

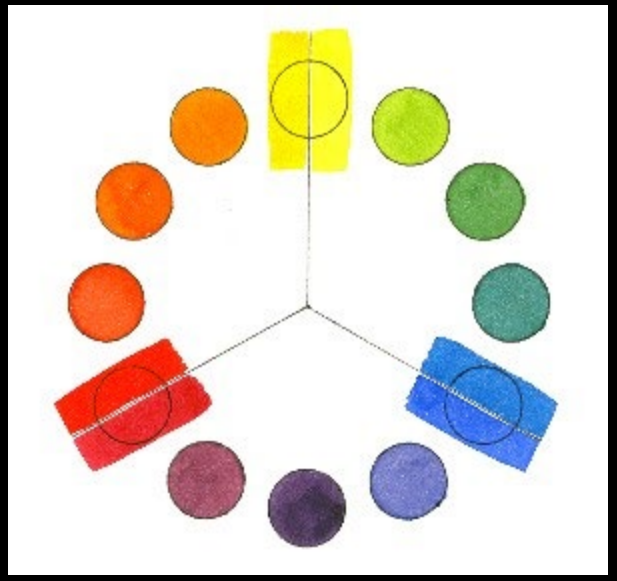

Green
projector
Red
Projector
Blue
Projector


Subtractive Color Mixing
Mixing Paints
BLUE
GREEN
YELLOW
BLACK
VIOLET
ORANGE
RED
CYAN
GREEN
YELLOW
BLACK
BLUE
RED
MAGENTA
Mixing Printer's Inks



Subtractive color mixing






VIOLET
COOL COLORS
RED-VIOLET
WARM COLORS
BLUE-VIOLET
RED
BLUE
RED-ORANGE
BLUE-GREEN
ORANGE
GREEN
YELLOW-ORANGE
YELLOW-GREEN
YELLOW
adding yellow
adding blue
adding red
adding white
adding black
How to use Color Wheel
Turn a color on the dial to an outside color. The mixture appears in window.
Color Definitions:
Primary Colors: Red, yellow and blue – cannot be mixed from any other colors.
Secondary Colors: Two primary colors mixed together resulting in orange, green and violet.
Tertiary (Intermediate) Colors: One Primary and one secondary mixed together.
Aggressive (Warm) Colors: Reds, oranges and yellows.
Receding (Cool) Colors: Greens, blues and violets.
Hue: Another name for color.
Tint: Color + White.
Tone: Color + Gray.
Shade: Color + Black.
Key Color: Dominant color in a color scheme or mixture.
Neutral Gray: Combination of black and white.
Intensity or Chroma: The brightness or dullness of a color.
Value: The lightness or darkness of a color.
Gray Scale
10% Black
Value 1
Value 2
Value 3
Value 4
Value 5
Value 6
Value 7
Value 8
Value 9
Value 10
100% Black
A guide to mixing color
COLOR WHEEL
for amateur and professional use
Printed in the U.S.A. THE COLOR WHEEL CO. © Copyright 1988. 6/99
COOL COLORS
WARM COLORS

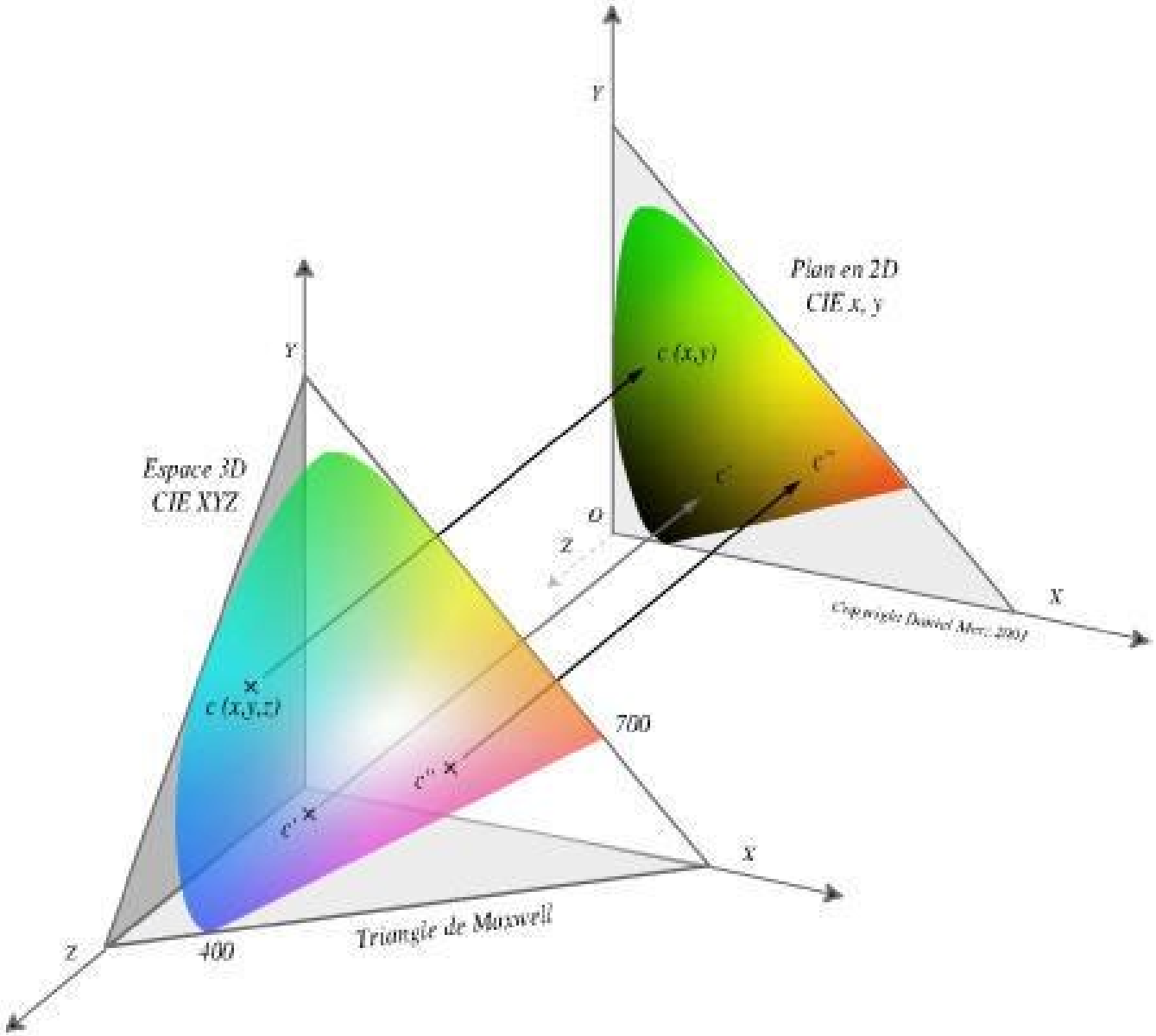
RAL 1000	RAL 1011	RAL 1019	RAL 1033	RAL 2009	RAL 3004	RAL 3015
RAL 1001	RAL 1012	RAL 1020	RAL 1034	RAL 2010	RAL 3005	RAL 3016
RAL 1002	RAL 1013	RAL 1021	RAL 2000	RAL 2011	RAL 3007	RAL 3017
RAL 1003	RAL 1014	RAL 1023	RAL 2001	RAL 2012	RAL 3009	RAL 3018
RAL 1004	RAL 1015	RAL 1024	RAL 2002	RAL 3000	RAL 3011	RAL 3020
RAL 1005	RAL 1016	RAL 1027	RAL 2003	RAL 3001	RAL 3012	RAL 3022
RAL 1006	RAL 1017	RAL 1028	RAL 2004	RAL 3002	RAL 3013	RAL 3027
RAL 1007	RAL 1018	RAL 1032	RAL 2008	RAL 3003	RAL 3014	RAL 3031

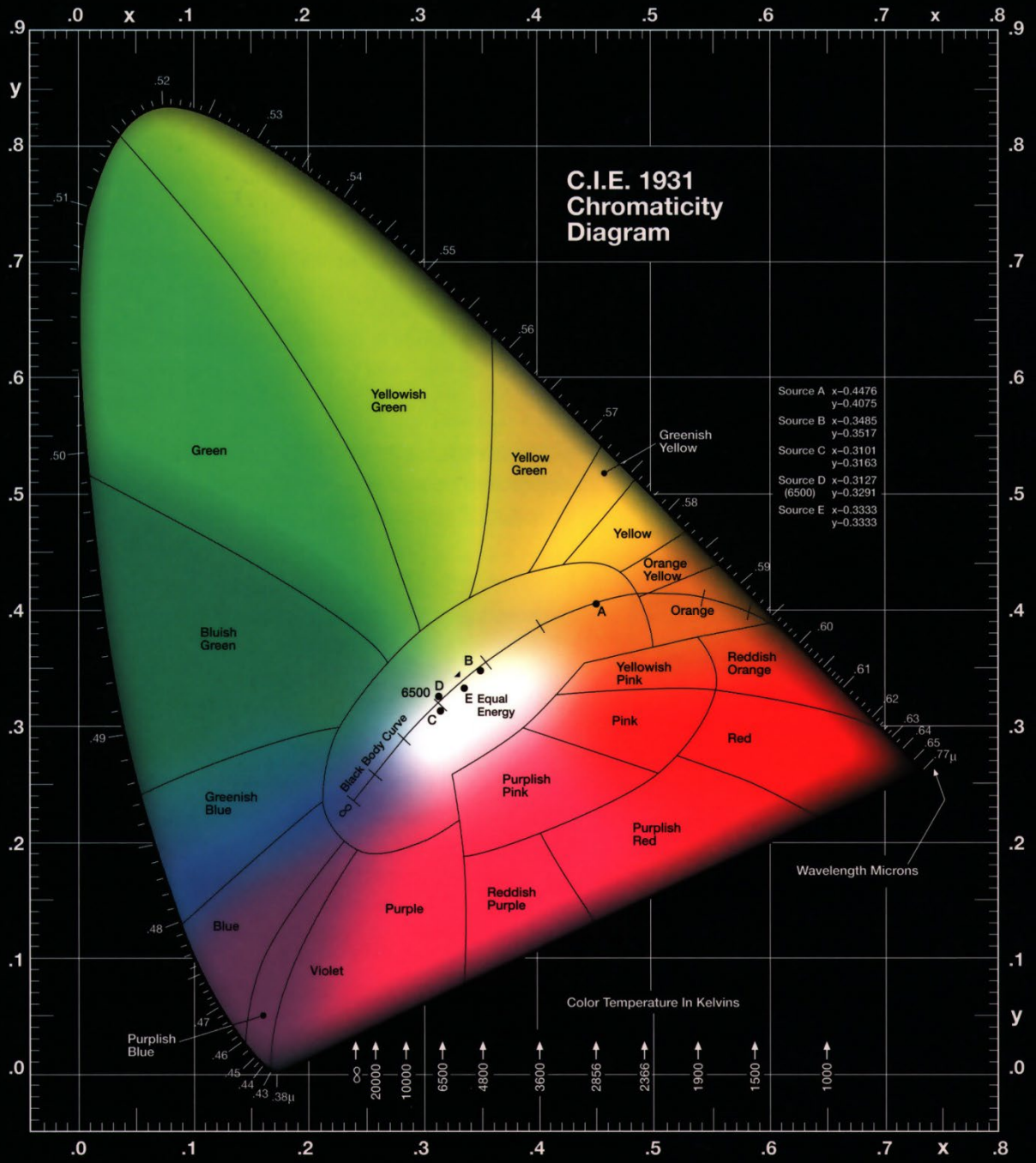
RAL 4001	RAL 4009	RAL 5008	RAL 5017	RAL 6000	RAL 6008	RAL 6016
RAL 4002	RAL 5000	RAL 5009	RAL 5018	RAL 6001	RAL 6009	RAL 6017
RAL 4003	RAL 5001	RAL 5010	RAL 5019	RAL 6002	RAL 6010	RAL 6018
RAL 4004	RAL 5002	RAL 5011	RAL 5020	RAL 6003	RAL 6011	RAL 6019
RAL 4005	RAL 5003	RAL 5012	RAL 5021	RAL 6004	RAL 6012	RAL 6020
RAL 4006	RAL 5004	RAL 5013	RAL 5022	RAL 6005	RAL 6013	RAL 6021
RAL 4007	RAL 5005	RAL 5014	RAL 5023	RAL 6006	RAL 6014	RAL 6022
RAL 4008	RAL 5007	RAL 5015	RAL 5024	RAL 6007	RAL 6015	RAL 6024

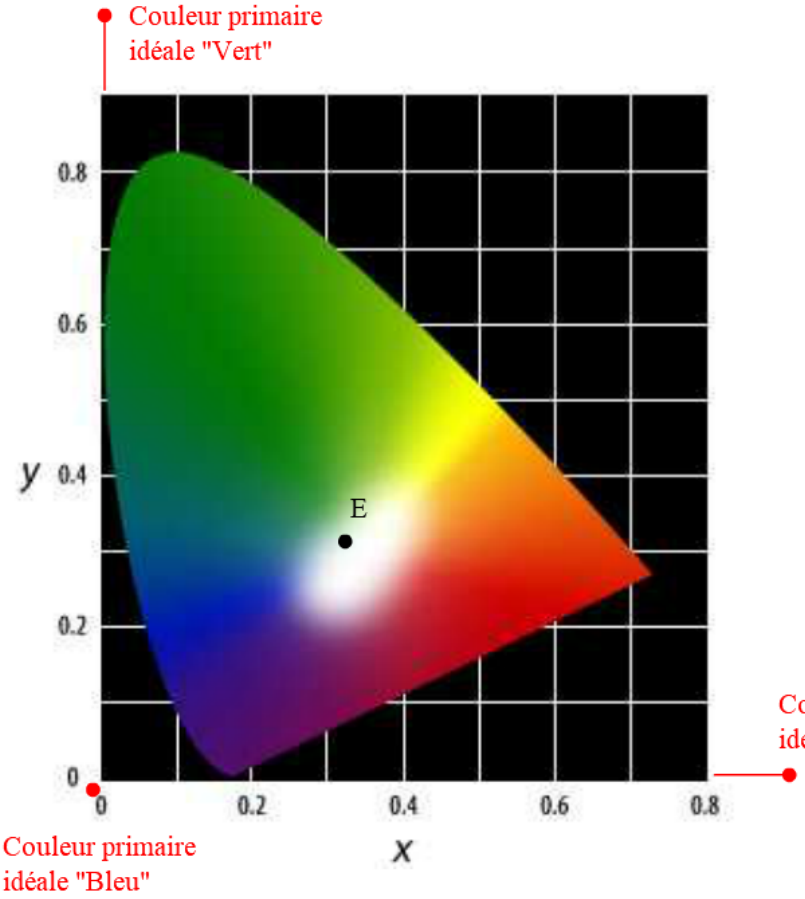
RAL 6025	RAL 7000	RAL 7009	RAL 7022	RAL 7034	RAL 7043	RAL 8008
RAL 6026	RAL 7001	RAL 7010	RAL 7023	RAL 7035	RAL 7044	RAL 8011
RAL 6027	RAL 7002	RAL 7011	RAL 7024	RAL 7036	RAL 8000	RAL 8012
RAL 6028	RAL 7003	RAL 7012	RAL 7026	RAL 7037	RAL 8001	RAL 8014
RAL 6029	RAL 7004	RAL 7013	RAL 7030	RAL 7038	RAL 8002	RAL 8015
RAL 6032	RAL 7005	RAL 7015	RAL 7031	RAL 7039	RAL 8003	RAL 8016
RAL 6033	RAL 7006	RAL 7016	RAL 7032	RAL 7040	RAL 8004	RAL 8017
RAL 6034	RAL 7008	RAL 7021	RAL 7033	RAL 7042	RAL 8007	RAL 8019

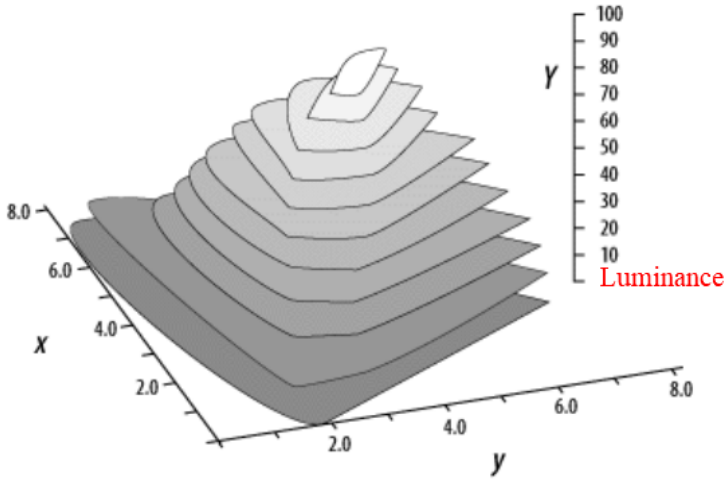
RAL 8022	RAL 8028	RAL 9003	RAL 9011
RAL 8023	RAL 9000	RAL 9004	RAL 9016
RAL 8024	RAL 9001	RAL 9005	RAL 9017
RAL 8025	RAL 9002	RAL 9010	RAL 9018

Die Farbangaben sind unverbindlich (Webdarstellung) und dienen lediglich der Orientierung.


Y
Plan en 2D
CIE x, y
c (x,y)
c'
c''
O
Z
X
Espace 3D
CIE XYZ
Y
c (x,y,z)
700
c''
c'
X
Z
400
Triangle de Maxwell

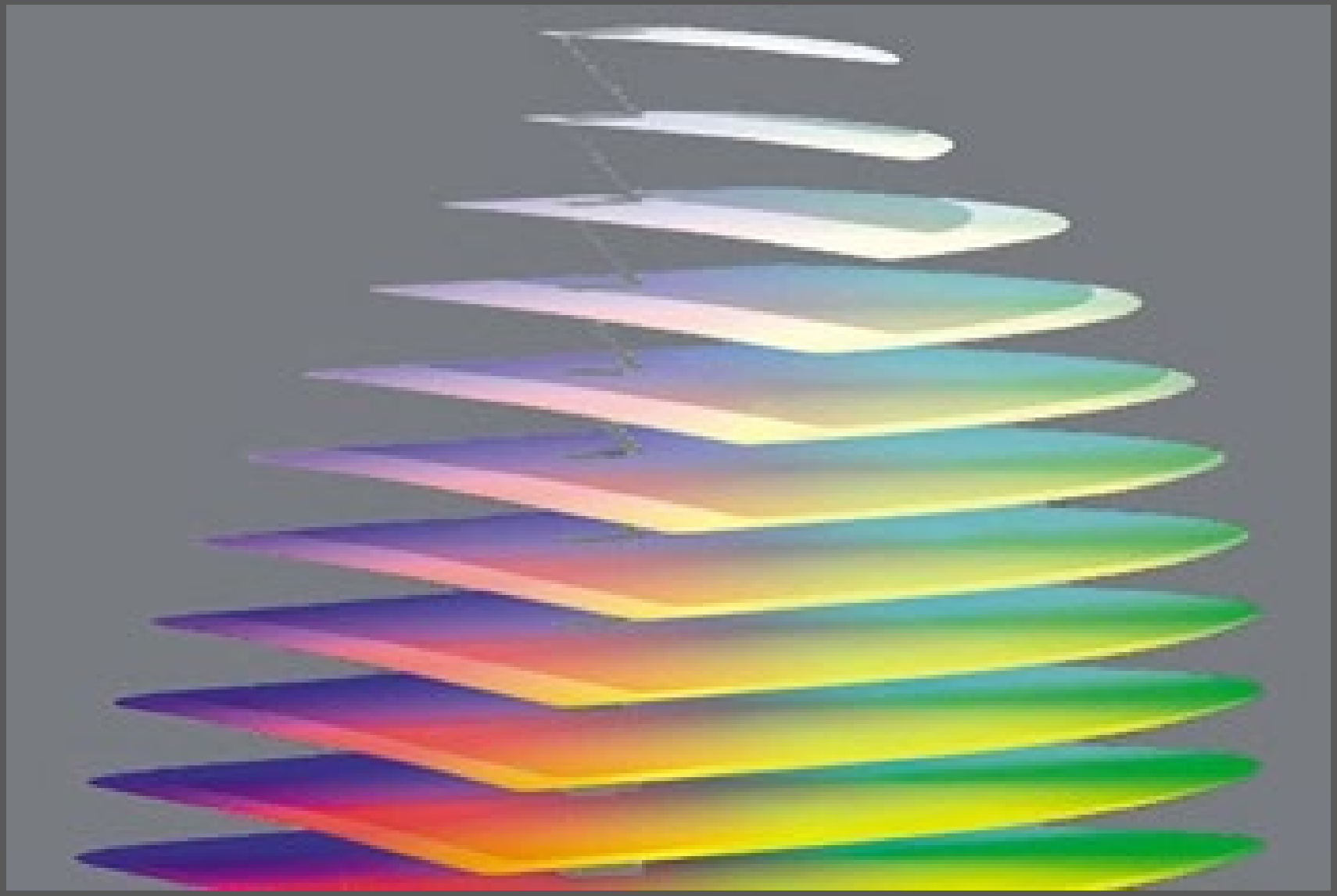

C.I.E. 1931
Chromaticity
Diagram
Source A x–0.4476 y–0.4075
Source B x–0.3485 y–0.3517
Source C x–0.3101 y–0.3163
Source D (6500) x–0.3127 y–0.3291
Source E x–0.3333 y–0.3333
Green
Yellowish Green
Yellow Green
Greenish Yellow
Yellow
Orange Yellow
Orange
Reddish Orange
Red
Pink
Yellowish Pink
Purplish Pink
Purplish Red
Purple
Reddish Purple
Violet
Blue
Greenish Blue
Bluish Green
Purplish Blue
A
B
C
D
E
6500
Equal Energy
Black Body Curve
Wavelength Microns
Color Temperature In Kelvins
∞ 20000 10000 6500 4800 3600 2856 2366 1900 1500 1000
x
y

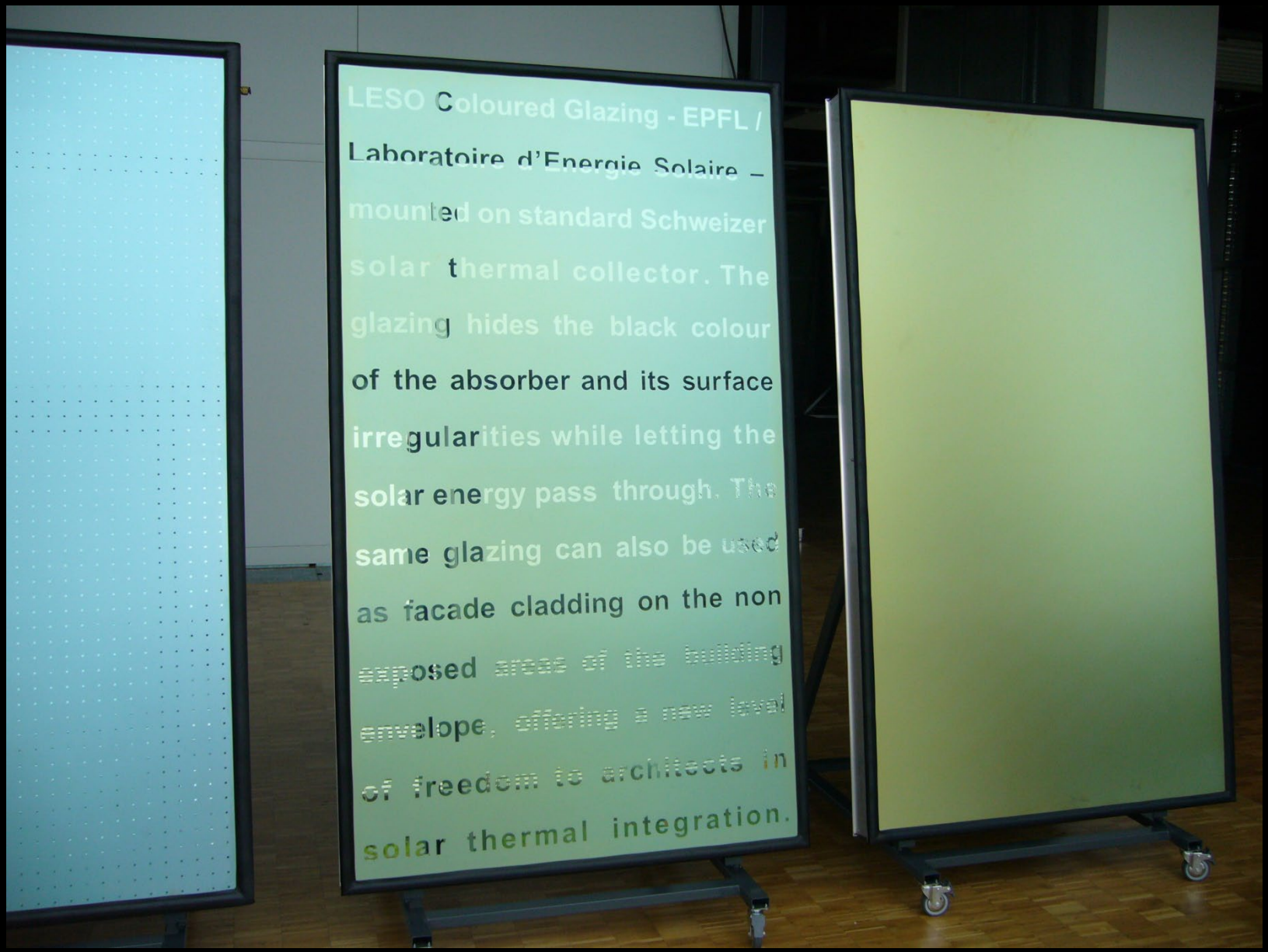




- Les coordonnées et composantes trichromatiques de toute couleur réelle sont positives;
- La composante Y n'est autre que la luminance de cette couleur ; elle est indépendante des deux autres primaires X et Z ;
- L'addition d'une unité de chaque couleur primaire produit un blanc idéal E.

Solide colorimétrique (ρ_{vis} , x , y)




LESO Coloured Glazing - EPFL /
Laboratoire d'Energie Solaire –
mounted on standard Schweizer
solar thermal collector. The
glazing hides the black colour
of the absorber and its surface
irregularities while letting the
solar energy pass through. The
same glazing can also be used
as facade cladding on the non
exposed areas of the building
envelope, offering a new level
of freedom to architects in
solar thermal integration.


DOMA


DOMA
Solartechnik
Büro ↑
Warenanlieferung →


Parc Solaire Romande Energie - EPFL
ROMANDE ENERGIE
EPFL
ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE