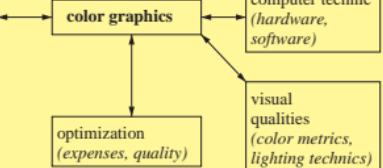


color television  
multicolor printing  
color photography



*visual properties:*

**color and  
color vision:**

color order  
color attributes  
color scaling  
measurement

**color reproduction**

*technical properties:*

**color reproduc-**  
**tion processes:**

color television  
color photography  
multicolor printing

*optimization with:*  
CIE-color measurement  
CIE-color coordinates

*three aims:*

testing

research and  
development

advice and  
information

**BAM laboratory:  
color reproduction**

*simulation of  
reproduction*

color original ->  
color film  
color film ->  
color printing  
color original ->  
color printing

*specification and  
judgement of  
color rendering-quality*

Ad001-3

*influence parameters  
on color reproduction  
quality of the  
reproduction row:*

**color original ->**  
**color film**

(test-)color original and illumination  
(spectral reflection and radiation)  
camera, taking filters, exposure  
(spectral radiation, normal exposure)  
film material and development  
(spectral and absolute sensitivity)  
further treatment and projection  
(framing, spectral radiation)

Ad001-7

*influence parameters  
on color reproduction  
quality of the  
reproductions row:*

**color film ->**  
**multicolor printing**

color film original and illumination  
(spectral transmission and radiation )  
production of color scan signal  
(spectral and absolute sensitivity )  
processing of color scan signal  
(calculation program print preparation)  
reproduction of multicolor printing  
(halftoning, orientation, printing inks)

Ad001-1

*influence parameters  
on color reproduction  
quality of the  
reproductions row:*

**color original ->**  
**color film ->**  
**multicolor printing**

mode of taking light and exposure  
(3200 / 6500 / 9000 K; -3 / 0 / +3 DIN)  
color film material  
(Agfa, Fuji, Kodak, Konika, 3M)  
properties of color scan signal  
(spectral and absolute sensitivity)  
reproduction model and printing inks  
(signal processing, EURO color scale)

Ad001-3

**scanner for color slide material:**

- three photoelectric sensors
- 0.01 mm image point diameter
- 4096 (12 bits) luminance range

measurement at each pixel:  
**3 color values O, L and V**

**development intent:**  
**colorimetric device driver:**

conversion of three color values  
**O, L and V** in color parameters  
**L\*, a\* and b\*** (CIELAB-system)

**problems:**

large pixel amount:  
approximately  $3000 \times 2000$  pixels  
within a color slide 36 mm  $\times$  24 mm  
often original size larger than  
DIN-A2 with drum scanners

**three procedures for optimization  
of colorimetric device driver:**

- adaptation of the spectral sensitivities at the three tristimulus value functions
- optimization of  $3 \times 3$ - or  $3 \times 6$ - device matrices for conversion from **OLV** to **L\*a\*b\*** with 17 CIE-test colors
- calculation of the spectral color reflection or transmission  
at each image position, for example  
with three densities of three known  
dyes (color pigments), only  
possibly with always homogeneous  
material presentations  
(slide material, printing material)

Ad001-7