BOOK REVIEW

Fundamentals of Printing Plates

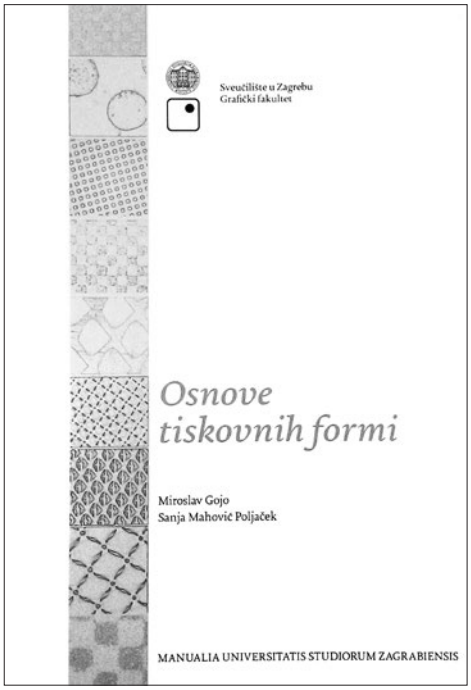
Authors

Miroslav Gojo*, Sanja Mahović Poljaček

Publisher:
University of Zagreb
Faculty of Graphic Arts,
Croatia

**E-mail: miroslav.gojo@grf.hr*

On 31st of January 2014 the textbook "Fundamentals of printing plates" written by Miroslav Gojo and Sanja Mahović Poljaček was promoted at the Faculty of Graphic Arts in Zagreb. The foreword was made by one of the reviewers, professor dr.sc. Ema Stupnišek Lisac.



Foreword

"Dear colleagues,

I am greeting you with a great pleasure today, because I am participating in this festive promotion of a new university textbook written by Miroslav Gojo and Sanja Mahović Poljaček, entitled "Fundamentals of printing plates", published by Faculty of Graphic Arts.

It has been more than 20 years since the last edition of "Kemigrafija" textbook dealing with a similar subject matter. It was obvious that nowadays, with the usage of new materials and new technologies in the printing plate workflow, different and refreshed approach to the subject matter within this area was needed.

Today we are going to present a textbook with a redefined name and a refreshed content.

The "Fundamentals of printing plates" textbook has been written with the intention of covering the subject of "Printing plates" which is taught at the Department for printing plates. It is, at the same time, the basis for understanding of other subjects taught at Graduate Study Course of Graphic Technology, such as "Surface phenomena" and "Photosensitive copying layers", as well as "Wetting of printing plates" at Postgraduate Study Course of Graphic Engineering and Graphic Product Design at the Faculty of Graphic Arts.

The textbook is of contemporary design, and divided into seven main sections:

CHAPTER 1 is titled "Printing plates". Since the subject for which this textbook has been written also bears that name, I decided to devote more attention to this chapter. The printing plate can be defined as a material from which the printing ink has to be transferred onto the printing surface in order to achieve an impression and the final product. It can be considered as one of the first materializations of the digital information of graphic design.

In this chapter four basic types of printing plates have been described: printing plates for the relief printing, printing plates for gravure printing, for screen printing and for offset lithography.

a) One of the oldest printing plates is the printing plate for relief printing. Text printing with movable type is also a relief technique in which a modular movable type was invented by Johannes Gutenberg. It is interesting to mention that the first printed book, Latin Gutenberg Bible, was printed with that type of printing plates in 1455. Nowadays printing plates for relief printing are made of metals (Zn, Mg) or of organic material (photopolymer).

b) In the 15th century a new technique of reproduction was developed by engraving of different types of metals (Cu or Zn). These were the first printing plates for intaglio printing and one of the most famous artists of engravings in that period was Albrecht Dürer. Printing plates for intaglio printing have a surface with image elements incised into a surface while the non-image elements are protruding and flush.

c) The forerunner of today's offset printing is a lithography technique. It was firstly used by Alois Senefelder in the 19th century. He used a limestone panel as a printing plate (stone printing) on which he drew a lithographic showering (greasy chalk). Lithography is a representative of the flatbed press, in which the stone was eventually replaced by metal (Zn, Al). Nowadays, the offset printing technique which evolved from the lithography technique is the most important representative of the flatbed press.

d) The printing plate for screen printing is one of the oldest printing plates. It was used in China around the 12th century, whereas in Europe the screen printing was introduced in the late 18th century. Printing plates for screen printing have not been dramatically changed throughout the years. They are constructed of a sieve or mesh taut to the frame to support an ink-blocking photosensitive material to receive a desired image. The attached stencil forms open areas of a mesh that transfer ink or other printable materials which can be pressed through the mesh as a sharp-edged image onto a printing surface. With this kind of technique it is possible to achieve the thickest layer of the printed ink on printed surface.

CHAPTER 2 entitled "Materials used for printing plates" describes the suitability of the material for the production of printing plates; their mechanical, physical and chemical properties and crystallographic structure. The mostly used metals in the printing plate production have been described in this section, e.g. Zn, Cu, Al, Mg, Cr, Ni, Fe, Ag, Hg, and organic materials (hydrophilic colloids, diazo-compounds, photopolymers and natural and synthetic fibers).

In CHAPTER 3 chemical dissolution and precipitation of metals have been presented. The mechanism of metal dissolution process that plays an important role in the processing of certain types of printing plates has been introduced in order to obtain the specific relief on the metal surface.

CHAPTER 4 is devoted to the fundamentals of electrochemistry and electrochemical processes. The first discoveries of Galvania and Volta in the 18th century, electrochemical double layer, the equilibrium potential and EMS, as well as electrolyze and Faraday laws from the 19th century have been presented in this chapter. In this section the cathode electrochemical processes used in printing plate making process (with copper, chrome and nickel plating) have been described in detail. The anodic processes, anodic oxidation of aluminum, important in the production of the printing plates, and electrochemical dissolution of metals in the preparation of printing plates for relief printing have been presented as well.

This chapter gives the potential reader the basics of electrochemistry and electrochemical processes in the application on the processing of the printing plates. The chapter is written very clearly and plainly, accompanied by plain illustrations. The authors of the textbook have shown devotion to this area because one of the authors, Miroslav Gojo, did his doctoral thesis at the Department for Physical Chemistry at the former Faculty of Technology, University of Zagreb, under the mentorship of academic Miroslav Karšulin, the founder of the School of electrochemistry in Zagreb.

In CHAPTER 5 the surface phenomena such as surface tension, polarity of the molecules, the principle of waterless offset, wetting, adsorption, chemisorption, and surfactants have been described.

In CHAPTER 6 different photosensitive layers and copying procedures have been described, while Chapter 7 deals with a photographic process, devices for printing plate exposure processes and spectral sensitivity of various photoactive layers.

The textbook is written professionally with the theoretical basis of all processes and materials used in conventional printing plate production. It will be useful for students of the Faculty of Graphic Arts and any other persons interested in this area. The authors of the textbook "Fundamentals of printing plates" along with the latest knowledge in the field of graphic technology transfer the knowledge from other scientific fields such as chemistry, physics, crystallography, electrical engineering and metallurgy within the subject matter.

The textbook contains all required elements: Preface and Introduction, List of symbols and abbreviations, References, Sources of photos, and especially a useful Index.

The book is enriched with interesting data about the history of printing as well as with the striking illustrations which makes it particularly attractive. I am convinced that this work published by the Faculty of Graphic Arts represents more than useful university textbook. "

Reviewer:

Prof. dr. sc. Ema Stupnišek Lisac