

MATERIALS FOR SECURITY ELEMENTS USED IN PROTECTED DOCUMENTS, OPTICAL EXAMINATION METHODS. A REVIEW .

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Abstract. *Each protected document contains a set of security elements, such as paper, inks, stamps, diffractive elements etc., which ensures its protection. It means a complex document protection features, made by special technology and visual features that allow unequivocally establishing authenticity and involves all materials, processes, methods, that allow achieving concrete protective effect, observable, or by using specialized equipment. When talking about physical and chemical methods of protection of the document, we usually refer to optical properties of materials that manifest itself in different regions of the spectrum, the various kinds of luminescence, the ability of absorption, reflection, refraction, diffraction and the magnetic properties of the security elements and pigments. The article briefly analyses representative materials the physical and optical properties of the security elements of the protected documents, characterization methods used and some results of measurements performed.*

Keywords: environment, multicomponent material, fibrous material, material composition, material additives, security elements, protected documents, counterfeits, forensic, document authenticity, ovi inks, colour pigment, watermarks, luminescence, fluorescence, optical methods, spectroscopy, band-pass filters, Bayer demosaicing

1. Introduction

In our activities we are dealing with a variety of documents. Official documents can have security levels. Banknotes, passports, driving licenses, are documents with security features [1].

The protection of documents means the use of variety of features made by specific technology and visual features that allow determining their authenticity [2].

This meaning all materials, processes, methods that allow the concrete effect, visually or by using specialized equipment. In this regard there must be a clear distinction between the elements of protection for the user and for experts. For the user are important elements allowing identification quick and as simple without the use of special equipment, methods and conditions of observation. Watermarked paper is a good example of this. For expertise, in addition to visual characteristics, it is important the confirmation of authenticity using special equipment.

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