Title (en)

METHODS FOR MANUFACTURING REFLECTIVE OPTICAL ELEMENTS, REFLECTIVE OPTICAL ELEMENTS, EUV-LITHOGRAPHY APPARATUSES AND METHODS FOR OPERATING OPTICAL ELEMENTS AND EUV-LITHOGRAPHY APPARATUSES, METHODS FOR DETERMINING THE PHASE SHIFT, METHODS FOR DETERMINING THE LAYER THICKNESS, AND APPARATUSES FOR CARRYI

Title (de)

VERFAHREN ZUR HERSTELLUNG REFLEKTIERENDER OPTISCHER ELEMENTE, REFLEKTIERENDE OPTISCHE ELEMENTE, EUV-LITHOGRAPHIEVORRICHTUNGEN UND -VERFAHREN ZUM BETREIBEN VON OPTISCHEN ELEMENTEN UND EUV-LITHOGRAPHIEVORRICHTUNGEN, VERFAHREN ZUR BESTIMMUNG DER PHASENVERSCHIEBUNG, VERFAHREN ZUR BESTIMMUNG DER SCHICHTDICKE UND VORRICHTUNGEN ZUM AUSFÜHREN

Title (fr)

PROCEDES DE FABRICATION D'ELEMENTS OPTIQUES REFLECTEURS, ELEMENTS OPTIQUES REFLECTEURS, APPAREIL DE LITHOGRAVURE AUX UV EXTREMES ET PROCEDES DE MISE EN OEUVRE D'ELEMENTS OPTIQUES ET D'APPAREILS DE LITHOGRAVURE AUX UV EXTREMES, PROCEDES POUR DETERMINER LE DEPHASAGE, PROCEDES POUR DETERMINER L'EPAISSE

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Abstract (en)

[origin: WO2005091076A2] The invention relates to a method for manufacturing of a multilayer system (25) with a cap layer system (30), in particular for a reflective optical element for the extreme ultraviolet up to the soft x-ray wavelength range, comprising the steps of: 1. preparing a coating design for the multilayer system (25) with cap layer system (30); 2. coating a substrate (20) with the multilayer system (25) with cap layer system (30); 3. spatially resolved measurement of the coated substrate in terms of reflectance and photoelectron current in at least one surface point; 4. comparison of the measured data with data modelled for different thicknesses of the layers (31, 32, 33) of the cap layer system (30) and/or the layers (21, 22, 23, 24) of the multilayer system (25) for determining of the thickness distribution obtained by the coating; 5. if necessary, adjusting of the coating parameters and repeating steps 2 to 5 until the coated thickness distribution coincides with the design. The invention also relates to further manufacturing methods, reflective optical elements, EUV-lithography apparatuses, and methods for operating optical elements and EUV-lithography apparatuses as well as methods for determining the phase shift, methods for determining the layer thickness, and apparatuses for carrying out the methods.

IPC 8 full level

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