Title (en)

METHOD FOR LASER BEAM-ASSISTED APPLICATION OF METAL IONS IN GLASS FOR PRODUCING COLORLESS AND COLOR PIXELS

Title (de)

VERFAHREN ZUM LASERSTRAHLGESTÜTZTEN EINTRAG VON METALLIONEN IN GLAS ZUR ERZEUGUNG VON FARBLOSEN UND FARBIGEN PIXELN

Title (fr)

PROCEDE POUR INSERER DANS DU VERRE DES IONS METALLIQUES AU MOYEN D'UN LASER, ET REALISER AINSI DES PIXELS INCOLORES ET COLORES

Publication

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Application

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Abstract (en)

[origin: WO02085807A2] The invention relates to a method for laser-assisted charging of metal ions by ion exchange and diffusion and for inner engraving of glass with color. Colorless pixels with a modified refractive index in relation to the surroundings and color pixels, for instance silver yellow and copper ruby, can be produced with the aid of the inventive method. The processes required for producing the metal particles that provoke glass coloring such as ion exchange and diffusion of metal ions in the glass, their reduction to atoms and the aggregation of atoms into metal particles are carried out in a locally limited manner by performing locally limited heating. To this end, the glass to be colored is covered with a film printed with flat, printable diffusion colors and the covered surface of the glass is locally heated with a focused laser beam. Metal particles appear in the heated areas and, hence, color pixels appear on the glass without damaging or melting the latter. Laser radiation can also be controlled in such a way that only ion exchange and diffusion of the exchanged ions takes place in the glass in a locally limited manner and colorless pixels appear. The pixels can be used for glass markings, engravings and decoration but also for producing passive optical elements, for example, transmission grids.

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IPC 8 full level

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