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(54) Title: CONDUCTIVE INK COMPOSITIONS INCORPORATING NANO GLASS FRIT AND NANO METAL FOR ENHANCED ADHESION WITH GLASS AND CERAMIC SUBSTRATES USED IN DISPLAYS

(57) Abstract: The present invention relates to a conductive ink composition for ink jet printing, which can form a conductive pattern by an ink jet printing method using a glass or ceramic substrate such as a flat panel display and a laminated manual component in producing components and elements that require a thermal process at a relatively high temperature of 400-800°C. It relates to a method for synthesizing silver nano sol having a uniform particle size, an excellent dispersion and an excellent sinterability, and to a conductive ink composition to which is added nano glass frit for improving adhesion between a conductive pattern, which is closely relates to a panel having long-term stability and reliability, and a glass substrate, the conductive ink composition being able to form patterns with excellent conductivity. According to the present invention, the conductive ink composition for ink jet printing comprising metal nano particles, a co-solvent and nano glass frit can form a conductive pattern using an ink jet printing method, and also enhance adhesion by fusing the nano glass frit, which is added during drying and heat treatment processes, with the substrate.



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AMENDED CLAIMS
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【Claim 1】 (amended)

A conductive ink composition for inkjet printer, characterized in that a co-solvent of a first solvent and a second solvent comprises silver nano particles and nano glass frit, wherein the nano glass frit is 0.5 to 20 weight parts based on 100 weight parts of the ink silver nano particle composition, and the size of the nano glass frit is 200 nm or less.

【Claim 2】 (amended)

The conductive ink composition for inkjet printer in claim 1, characterized in that the size of the silver nano particles is 50~100 nm.

【Claim 3】 (amended)

The conductive ink composition for inkjet printer in claim 1 or 2, characterized in that the content of said silver nano particles is 10 to 60 weight parts based on 100 weight parts of said ink composition.

【Claim 4】 (amended)

The conductive ink composition for inkjet printer in claim 1 or 2, characterized in that the co-solvent comprises a first solvent, which is one or more selected from the group consisting of water, ethanol, methanol, isopropanol, and ethyl lactate, and a second solvent, which is one or more selected from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol, dipropylene glycol, hexylene glycol, and glycerine.

【Claim 5】 (canceled)

【Claim 6】 (canceled)

【Claim 7】 (amended)

The conductive ink composition for inkjet printer in claim 1, wherein the silver nano particles are produced by the method being characterized by comprising the steps of: (A) melting silver (Ag) in nitric acid to make silver nitrate (AgNO_3), which is a silver precursor (pre-Ag); (B) diluting the silver nitrate obtained in step (A) and adding ammonia water to form a complex compound; (C) injecting a dispersion agent to make a silver complex compound which is monodispersed; (D) reducing the silver complex compound by using a reducing agent; (E) washing it by using an organic solvent and distilled water; and (F) re-dispersing it in a distilled water to obtain 10~50 w.t.% silver nanosol.

STATEMENT UNDER PCT ARTICLE 19

Claim 1 has been amended herein to merger claims 2 and 3. Claims 2 has been amended to be specified. Claim 7 has been amended to be dependent upon amended claim 1. The purpose of these amendments is to limit the scope of the claimed invention to the expression of the silver nano particles. These amendments should have no effect on the description and drawings.