conventional ink where the coloring agent would instead be a pigment or a dye. While the use of metal inks can reduce the wastage inherent to foil printing, it results in different drawbacks. There have been reports that printing methods making use of this alternative, did not, for example, achieve the print quality affordable from foil printing.

The Applicant has recognized the need for improved printing methods and systems that are more cost effective and environmentally friendly, yet produce quality print constructions.

SUMMARY

The Applicant has invented a novel printing method described in more details in a co-pending application. The present disclosure is concerned by the print constructions that may be obtained by the method, which is therefore briefly introduced herein to facilitate an understanding of the present teachings.

According to an aspect of the present invention, there is provided a print construction comprising:

(a) a printing substrate having an image-receiving surface;

(b) a receptive layer, at least partially covering said image-receiving surface, and having a particle reception surface distally disposed to said image-receiving surface, said receptive layer optionally having a thickness of at least 1000 nanometer (nm); and

(c) a plurality of individual particles adhered to said particle reception surface, and forming a monolayer thereon;

wherein a number-averaged aspect ratio (**ASPavg**) of said plurality of particles is defined by:

$$\mathbf{ASPavg = Lavg/Havg}$$

wherein **Lavg** is a number-averaged maximum long dimension of said plurality of particles;

wherein **Havg** is a number-averaged maximum thickness of said plurality of particles; and

wherein said plurality of particles exhibit at least one of the following structural properties:

(A) said number-averaged maximum long dimension (**Lavg**) is at most 800 micrometers;

(B) said number-averaged maximum average thickness (**Havg**) is at most 1200nm;

(C) said number-averaged aspect ratio (**ASPavg**) is at least 1.5:1; and

wherein said monolayer has an optical surface coverage ratio of at least 20%, at least 50%, at least 60%, at least 70%, at least 80%, or at least 90%.

The printing method comprises providing a donor surface, coating the donor surface with individual particles (*e.g.*, at a coating station), and repeatedly performing the steps of: (i) treating the substrate surface (*e.g.*, at a treating station) to render the affinity of the particles to at least selected regions of the substrate surface greater than the affinity of the particles to the donor surface, (ii) pressing the substrate surface against the donor surface (*e.g.*, at an impression station) to cause a monolayer of particles to transfer from regions of the donor surface only to the selected regions of the substrate surface (thus creating exposed regions of the donor surface in regions corresponding to the selected regions), and (iii) recoating the donor surface with a fresh layer of particles so that only the regions of the donor surface exposed by the transfer of the particles from the donor surface to the substrate in step (ii) are replenished to permit printing of a subsequent image on a substrate surface.

The donor surface coated with particles is used in a manner analogous to the foil used in foil imaging. However, unlike foil imaging, the damage caused to the continuity of the particle layer on the donor surface by each impression can be repaired by re-coating only the exposed regions of the donor surface from which the previously applied layer has been stripped by transfer to the selected regions of the substrate.

The reason that the particle layer on the donor surface can be repaired after each impression is that the particles are selected to adhere to the donor surface more strongly than they do to one another. This results in the applied layer being substantially a monolayer of individual particles. The term "monolayer", defined more rigorously herein-below, is used herein to describe a layer in which - ideally - each particle has at least a portion that is in direct