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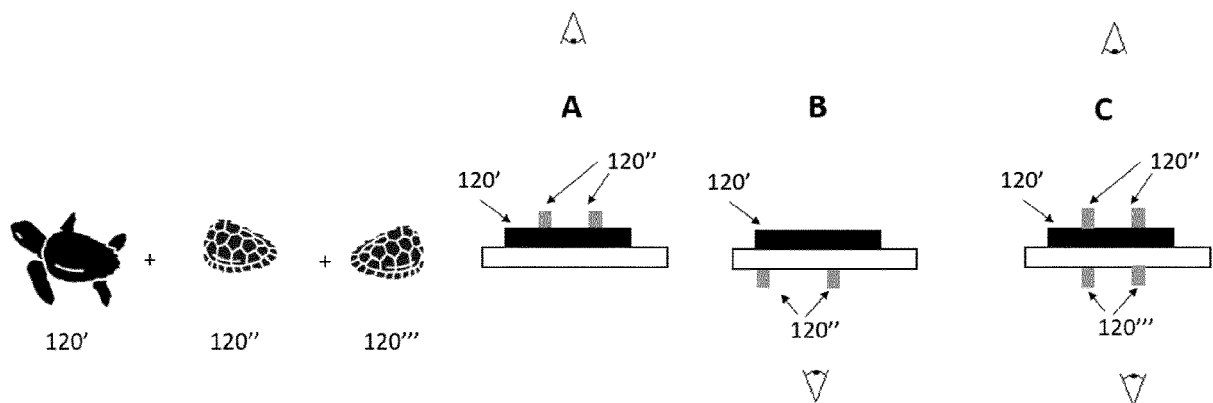
PROCESSES FOR PRODUCING OPTICAL EFFECTS LAYERS

(57)

The invention relates to the field of the protection of security documents such as for example banknotes and identity documents against counterfeit and illegal re-production. In particular, the present invention provides

processes for producing optical effect layers (OELs) comprising at least a first motif and a second motif, each of said motifs independently comprising platelet-shaped magnetic or magnetizable pigment particles.

Fig. 1





PARTIAL EUROPEAN SEARCH REPORT

Application Number

under Rule 62a and/or 63 of the European Patent Convention.
This report shall be considered, for the purposes of
subsequent proceedings, as the European search report

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X,D	WO 2022/049024 A1 (SICPA HOLDING SA [CH]) 10 March 2022 (2022-03-10) * paragraphs [0015], [0016]; figures 3c, 3e *	1	INV. B05D3/00 B05D5/06
X,D	WO 2012/104098 A1 (SICPA HOLDING SA [CH]; DEGOTT PIERRE [CH] ET AL.) 9 August 2012 (2012-08-09) * claims 15, 21, 25, 26; figures 3a, 3b, 4a, 4b, 4c, 4d *	1-7, 13, 15	ADD. B05D7/00
			TECHNICAL FIELDS SEARCHED (IPC)
			B05D

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

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Place of search	Date of completion of the search	Examiner
The Hague	21 August 2024	Slembrouck, Igor
CATEGORY OF CITED DOCUMENTS		
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document		

EPO FORM 1503 03/82 (P04E07)



INCOMPLETE SEARCH SHEET C

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Claim(s) completely searchable:
2-15

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Claim(s) searched incompletely:
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Reason for the limitation of the search:

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(1) In claim 1, the term "adjacent" is used to characterise the relation between the respective geometric position of the first coating layer (x20') and the second coating layer (x20'').

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According to the Oxford English Dictionary, the term "adjacent" means: "Next to or very near something else; neighbouring; bordering, contiguous; adjoining".

A clear and unambiguous relation between the geometric position of the first coating layer (x20') and the second coating layer (x20'')

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cannot be deduced from the term "adjacent".

From dependent claim 13, it appears furthermore that the first and second layer can be on the same side of the substrate (first and fourth options of step a'') of claim 13)

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or

the first and second layer can be on the opposite side of the substrate (second and third options of step a'') of claim 13).

This confirms that the term "adjacent" can not be limited to the interpretations "contiguous" or "adjoining".

Said term therefore renders the scope of claim 1 unclear, contrary to the requirements of Article 84 EPC.

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A meaningful search of the whole scope of claim 1 can therefore not be considered meaningful.

(2) This point does not constitute an objection but is meant to explain the interpretation of the examiner of the scope of claim 1.

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According to the common knowledge of the skilled person, the term "in register" used in the definition of step a'') of the process of claim 1 means that the layer applied (resp. printed) "in register" is applied at the precise position "as intended".

Any printing process applying superposed or contiguous layers aims at applying the different layers at the precise position as intended.

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Hence the term "in register" used in claim 1 cannot be considered as possibly restricting the scope of claim 1, as long as a printing process is involved (which seems to be the case when considering the content of the application as a whole).

(3) In claim 15, the first coating layer is referred to as (x20) and the second coating layer is referred to as (x20').

Claim 15 depends from claim 1.

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In claim 1, the first coating layer is referred to as (x20') and the second coating is referred to as (x20'').

This inconsistency between the references used in claims 1 and 15 renders the scope of those claims unclear, contrary to the requirements of Article 84 EPC.

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(4) Accordingly, pursuant to Rule 63(2) EPC, the search report has been drawn up on the basis of the following interpretation of claim 1 (hereinafter referred to as "claim 1 as searched"):



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"a process for producing an optical effect layer (OEL) on a substrate (S), said OEL comprising a first motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a first magnetic pattern and a second motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a second magnetic pattern, said process comprising:

a first set of steps consisting of

a') applying onto the substrate (S) a first radiation curable coating composition, comprising the platelet-shaped magnetic or magnetizable pigment particles so as to form a first coating layer (L1) on said substrate (S), said coating composition being in a first state,

b') exposing the first radiation curable coating composition of step a') to a magnetic field of a magnetic assembly (MA1) so as to magnetically orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles;

c') at least partially curing the first radiation curable coating composition of step b') to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the first motif; and

a second set of steps consisting of

a") applying in register a second radiation curable coating composition, comprising platelet-shaped magnetic or magnetizable pigment particles so as to form a second coating layer (L2), said coating composition being in a first state,

b") exposing the second radiation curable coating composition of step a") to a magnetic field of a magnetic assembly (MA2) so as to bi-axially orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles to i) have both their X-axis and Y-axis substantially parallel to the substrate (S) surface, or ii) have their X-Y plane parallel to an imaginary spheroid surface;

c") at least partially curing the second radiation curable coating composition of step b") to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the second motif".

The attention of the applicant is brought to the fact that in step a'') of the process according to claim 1 as searched, the following (unclear) feature has been removed:

"and at least a part of the second coating layer (L2) being adjacent to at least a part of the first coating layer (L1)".

Claim 1 as searched appears to comprise a reasonable definition of what is understood to be the invention for which protection is sought.



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

2-7, 13, 15 (completely); 1 (partially)

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



LACK OF UNITY OF INVENTION SHEET B

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 2-7, 13, 15 (completely); 1 (partially)

a process for producing an optical effect layer (OEL) on a substrate (S), said OEL comprising a first motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a first magnetic pattern and a second motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a second magnetic pattern, said process comprising:

a first set of steps consisting of

a') applying onto the substrate (S) a first radiation curable coating composition, comprising the platelet-shaped magnetic or magnetizable pigment particles so as to form a first coating layer (L1) on said substrate (S), said coating composition being in a first state,

b') exposing the first radiation curable coating composition of step a') to a magnetic field of a magnetic assembly (MA1) so as to magnetically orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles;

c') at least partially curing the first radiation curable coating composition of step b') to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the first motif; and

a second set of steps consisting of

a") applying in register a second radiation curable coating composition, comprising platelet-shaped magnetic or magnetizable pigment particles so as to form a second coating layer (L2), said coating composition being in a first state,

b") exposing the second radiation curable coating composition of step a") to a magnetic field of a magnetic assembly (MA2) so as to bi-axially orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles to i) have both their X-axis and Y-axis substantially parallel to the substrate (S) surface, or ii) have their X-Y plane parallel to an imaginary spheroid surface;

c") at least partially curing the second radiation curable coating composition of step b") to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the second motif,

1.1. claims: 2-4 (completely); 1 (partially)

a process for producing an optical effect layer (OEL) on a substrate (S), said OEL comprising a first motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a first



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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

magnetic pattern and a second motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a second magnetic pattern, said process comprising:

a first set of steps consisting of

a') applying onto the substrate (S) a first radiation curable coating composition, comprising the platelet-shaped magnetic or magnetizable pigment particles so as to form a first coating layer (L1) on said substrate (S), said coating composition being in a first state,

b') exposing the first radiation curable coating composition of step a') to a magnetic field of a magnetic assembly (MA1) so as to magnetically orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles;

c') at least partially curing the first radiation curable coating composition of step b') to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the first motif; and

a second set of steps consisting of

a") applying in register a second radiation curable coating composition, comprising platelet-shaped magnetic or magnetizable pigment particles so as to form a second coating layer (L2), said coating composition being in a first state,

b") exposing the second radiation curable coating composition of step a") to a magnetic field of a magnetic assembly (MA2) so as to bi-axially orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles to i) have both their X-axis and Y-axis substantially parallel to the substrate (S) surface, or ii) have their X-Y plane parallel to an imaginary spheroid surface;

c") at least partially curing the second radiation curable coating composition of step b") to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the second motif,

wherein the orientation step is further specified

1.2. claims: 5, 6(completely); 1(partially)

a process for producing an optical effect layer (OEL) on a substrate (S), said OEL comprising a first motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a first magnetic pattern and a second motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a second magnetic pattern, said process comprising:

a first set of steps consisting of



**LACK OF UNITY OF INVENTION
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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

a') applying onto the substrate (S) a first radiation curable coating composition, comprising the platelet-shaped magnetic or magnetizable pigment particles so as to form a first coating layer (L1) on said substrate (S), said coating composition being in a first state,
b') exposing the first radiation curable coating composition of step a') to a magnetic field of a magnetic assembly (MA1) so as to magnetically orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles;
c') at least partially curing the first radiation curable coating composition of step b') to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the first motif; and
a second set of steps consisting of
a") applying in register a second radiation curable coating composition, comprising platelet-shaped magnetic or magnetizable pigment particles so as to form a second coating layer (L2), said coating composition being in a first state,
b") exposing the second radiation curable coating composition of step a") to a magnetic field of a magnetic assembly (MA2) so as to bi-axially orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles to i) have both their X-axis and Y-axis substantially parallel to the substrate (S) surface, or ii) have their X-Y plane parallel to an imaginary spheroid surface;
c") at least partially curing the second radiation curable coating composition of step b") to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the second motif,
wherein the colours of the layers are further specified

1.3. claims: 7(completely); 1(partially)

a process for producing an optical effect layer (OEL) on a substrate (S), said OEL comprising a first motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a first magnetic pattern and a second motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a second magnetic pattern, said process comprising:
a first set of steps consisting of
a') applying onto the substrate (S) a first radiation curable coating composition, comprising the platelet-shaped magnetic or magnetizable pigment particles so as to form a first coating layer (L1) on said substrate (S), said coating composition being in a first state,



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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

b') exposing the first radiation curable coating composition of step a') to a magnetic field of a magnetic assembly (MA1) so as to magnetically orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles; c') at least partially curing the first radiation curable coating composition of step b') to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the first motif; and a second set of steps consisting of a") applying in register a second radiation curable coating composition, comprising platelet-shaped magnetic or magnetizable pigment particles so as to form a second coating layer (L2), said coating composition being in a first state, b") exposing the second radiation curable coating composition of step a") to a magnetic field of a magnetic assembly (MA2) so as to bi-axially orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles to i) have both their X-axis and Y-axis substantially parallel to the substrate (S) surface, or ii) have their X-Y plane parallel to an imaginary spheroid surface; c") at least partially curing the second radiation curable coating composition of step b") to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the second motif, wherein the deposition method (printing) of the layers is further specified

1.4. claims: 1, 13(all partially)

a process for producing an optical effect layer (OEL) on a substrate (S), said OEL comprising a first motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a first magnetic pattern and a second motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a second magnetic pattern, said process comprising: a first set of steps consisting of a') applying onto the substrate (S) a first radiation curable coating composition, comprising the platelet-shaped magnetic or magnetizable pigment particles so as to form a first coating layer (L1) on said substrate (S), said coating composition being in a first state, b') exposing the first radiation curable coating composition of step a') to a magnetic field of a magnetic assembly (MA1) so as to magnetically orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles;



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c') at least partially curing the first radiation curable coating composition of step b') to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the first motif; and
a second set of steps consisting of
a") applying in register a second radiation curable coating composition, comprising platelet-shaped magnetic or magnetizable pigment particles so as to form a second coating layer (L2), said coating composition being in a first state,
b") exposing the second radiation curable coating composition of step a") to a magnetic field of a magnetic assembly (MA2) so as to bi-axially orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles to i) have both their X-axis and Y-axis substantially parallel to the substrate (S) surface, or ii) have their X-Y plane parallel to an imaginary spheroid surface;
c") at least partially curing the second radiation curable coating composition of step b") to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the second motif,
wherein the first motif and the second motif are on the same side of the substrate, and wherein a third motif is applied

1.5. claims: 1, 13(all partially)

a process for producing an optical effect layer (OEL) on a substrate (S), said OEL comprising a first motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a first magnetic pattern and a second motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a second magnetic pattern, said process comprising:
a first set of steps consisting of
a') applying onto the substrate (S) a first radiation curable coating composition, comprising the platelet-shaped magnetic or magnetizable pigment particles so as to form a first coating layer (L1) on said substrate (S), said coating composition being in a first state,
b') exposing the first radiation curable coating composition of step a') to a magnetic field of a magnetic assembly (MA1) so as to magnetically orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles;
c') at least partially curing the first radiation curable coating composition of step b') to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so



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as to produce the first motif; and
a second set of steps consisting of
a") applying in register a second radiation curable coating composition, comprising platelet-shaped magnetic or magnetizable pigment particles so as to form a second coating layer (L2), said coating composition being in a first state,
b") exposing the second radiation curable coating composition of step a") to a magnetic field of a magnetic assembly (MA2) so as to bi-axially orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles to i) have both their X-axis and Y-axis substantially parallel to the substrate (S) surface, or ii) have their X-Y plane parallel to an imaginary spheroid surface;
c") at least partially curing the second radiation curable coating composition of step b") to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the second motif,
wherein the first motif and the second motif are on different sides of the substrate, and wherein a third motif is applied

1.6. claims: 15(completely); 1(partially)

a process for producing an optical effect layer (OEL) on a substrate (S), said OEL comprising a first motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a first magnetic pattern and a second motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a second magnetic pattern, said process comprising:
a first set of steps consisting of
a') applying onto the substrate (S) a first radiation curable coating composition, comprising the platelet-shaped magnetic or magnetizable pigment particles so as to form a first coating layer (L1) on said substrate (S), said coating composition being in a first state,
b') exposing the first radiation curable coating composition of step a') to a magnetic field of a magnetic assembly (MA1) so as to magnetically orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles;
c') at least partially curing the first radiation curable coating composition of step b') to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the first motif; and
a second set of steps consisting of
a") applying in register a second radiation curable coating



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composition, comprising platelet-shaped magnetic or magnetizable pigment particles so as to form a second coating layer (L2), said coating composition being in a first state,
b") exposing the second radiation curable coating composition of step a") to a magnetic field of a magnetic assembly (MA2) so as to bi-axially orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles to i) have both their X-axis and Y-axis substantially parallel to the substrate (S) surface, or ii) have their X-Y plane parallel to an imaginary spheroid surface;
c") at least partially curing the second radiation curable coating composition of step b") to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the second motif,
wherein the precision of the register of the first coating layer and second coating layer is further specified

2. claims: 8 (completely); 1 (partially)

a process for producing an optical effect layer (OEL) on a substrate (S), said OEL comprising a first motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a first magnetic pattern and a second motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a second magnetic pattern, said process comprising:
a first set of steps consisting of
a') applying onto the substrate (S) a first radiation curable coating composition, comprising the platelet-shaped magnetic or magnetizable pigment particles so as to form a first coating layer (L1) on said substrate (S), said coating composition being in a first state,
b') exposing the first radiation curable coating composition of step a') to a magnetic field of a magnetic assembly (MA1) so as to magnetically orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles;
c') at least partially curing the first radiation curable coating composition of step b') to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the first motif; and
a second set of steps consisting of
a") applying in register a second radiation curable coating composition, comprising platelet-shaped magnetic or magnetizable pigment particles so as to form a second coating layer (L2), said coating composition being in a



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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

first state,
b") exposing the second radiation curable coating composition of step a") to a magnetic field of a magnetic assembly (MA2) so as to bi-axially orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles to i) have both their X-axis and Y-axis substantially parallel to the substrate (S) surface, or ii) have their X-Y plane parallel to an imaginary spheroid surface;
c") at least partially curing the second radiation curable coating composition of step b") to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the second motif, wherein the exposition to magnetic field and the curing are (partially) simultaneous

3. claims: 9 (completely); 1 (partially)

a process for producing an optical effect layer (OEL) on a substrate (S), said OEL comprising a first motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a first magnetic pattern and a second motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a second magnetic pattern, said process comprising:

a first set of steps consisting of
a') applying onto the substrate (S) a first radiation curable coating composition, comprising the platelet-shaped magnetic or magnetizable pigment particles so as to form a first coating layer (L1) on said substrate (S), said coating composition being in a first state,
b') exposing the first radiation curable coating composition of step a') to a magnetic field of a magnetic assembly (MA1) so as to magnetically orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles;
c') at least partially curing the first radiation curable coating composition of step b') to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the first motif; and
a second set of steps consisting of
a") applying in register a second radiation curable coating composition, comprising platelet-shaped magnetic or magnetizable pigment particles so as to form a second coating layer (L2), said coating composition being in a first state,
b") exposing the second radiation curable coating composition of step a") to a magnetic field of a magnetic



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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

assembly (MA2) so as to bi-axially orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles to i) have both their X-axis and Y-axis substantially parallel to the substrate (S) surface, or ii) have their X-Y plane parallel to an imaginary spheroid surface;

c") at least partially curing the second radiation curable coating composition of step b") to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the second motif, wherein the curing step is further specified (UV-Vis LED)

4. claims: 10 (completely); 1 (partially)

a process for producing an optical effect layer (OEL) on a substrate (S), said OEL comprising a first motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a first magnetic pattern and a second motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a second magnetic pattern, said process comprising:

a first set of steps consisting of

a') applying onto the substrate (S) a first radiation curable coating composition, comprising the platelet-shaped magnetic or magnetizable pigment particles so as to form a first coating layer (L1) on said substrate (S), said coating composition being in a first state,

b') exposing the first radiation curable coating composition of step a') to a magnetic field of a magnetic assembly (MA1) so as to magnetically orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles;

c') at least partially curing the first radiation curable coating composition of step b') to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the first motif; and

a second set of steps consisting of

a") applying in register a second radiation curable coating composition, comprising platelet-shaped magnetic or magnetizable pigment particles so as to form a second coating layer (L2), said coating composition being in a first state,

b") exposing the second radiation curable coating composition of step a") to a magnetic field of a magnetic assembly (MA2) so as to bi-axially orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles to i) have both their X-axis and Y-axis substantially parallel to the substrate (S) surface, or ii)



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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

have their X-Y plane parallel to an imaginary spheroid surface;
c") at least partially curing the second radiation curable coating composition of step b") to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the second motif,
wherein the pigment particles are further specified

5. claims: 11, 12, 14 (completely); 1 (partially)

a process for producing an optical effect layer (OEL) on a substrate (S), said OEL comprising a first motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a first magnetic pattern and a second motif comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles oriented according to a second magnetic pattern, said process comprising:

a first set of steps consisting of

a') applying onto the substrate (S) a first radiation curable coating composition, comprising the platelet-shaped magnetic or magnetizable pigment particles so as to form a first coating layer (L1) on said substrate (S), said coating composition being in a first state,

b') exposing the first radiation curable coating composition of step a') to a magnetic field of a magnetic assembly (MA1) so as to magnetically orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles;

c') at least partially curing the first radiation curable coating composition of step b') to a second state so as to fix the platelet-shaped magnetic or magnetizable pigment particles in their adopted positions and orientations and so as to produce the first motif; and

a second set of steps consisting of

a") applying in register a second radiation curable coating composition, comprising platelet-shaped magnetic or magnetizable pigment particles so as to form a second coating layer (L2), said coating composition being in a first state,

b") exposing the second radiation curable coating composition of step a") to a magnetic field of a magnetic assembly (MA2) so as to bi-axially orient at least a part of the platelet-shaped magnetic or magnetizable pigment particles to i) have both their X-axis and Y-axis substantially parallel to the substrate (S) surface, or ii) have their X-Y plane parallel to an imaginary spheroid surface;

c") at least partially curing the second radiation curable coating composition of step b") to a second state so as to



LACK OF UNITY OF INVENTION
SHEET B

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

fix the platelet-shaped magnetic or magnetizable pigment
particles in their adopted positions and orientations and so
as to produce the second motif,
wherein the substrate is further specified

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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