

CLAIMS

5 What is claimed is:

1. A coated substrate, comprising:
a light transmissive substrate having one or more major surfaces; and
a coating disposed on at least a portion of one major surface of the substrate, the
coating comprising a plurality of discrete layers, including:
 - 10 a first reflective layer;
 - a second reflective layer disposed above first reflective layer;
 - a third reflective layer disposed above second reflective layer;
 - a first oxide layer disposed between first and second reflective layers;
 - a second oxide layer disposed between second and third reflective layers;
 - 15 a third oxide layer disposed between the substrate and the first reflective
layer; and
 - an alloy layer disposed between first and second reflective layers and
contiguous to the second reflective layer;wherein the coating has a thickness of about 1000 Å to 4000 Å.
- 20 2. The coated substrate of claim 1 wherein the light transmissive substrate
comprises a glass.
3. The coated substrate of claim 1 wherein the light transmissive substrate
25 comprises a polymer, a polyacrylate, or a polycarbonate.
4. The coated substrate of claim 1 wherein the each of the first, second, and
third reflective layers are about 50 Å to 200 Å thick and consist essentially of silver.
- 30 5. The coated substrate of claim 1 wherein the alloy layer is about 5 Å to
100 Å thick and comprises at least about 58 weight% Ni, about 20 to about 23 weight%
Cr, about 8 to about 10 weight% Mo, about 3.15 to about 4.15 weight% Nb/Ta, and less
than about 5 weight% Fe.

5 6. The coated substrate of claim 1 wherein the first oxide layer, the second
oxide layer, or both are about 300 Å to 1000 Å thick and comprise ZnO, SnO₂, SnO_x, or
a mixture thereof.

 7. The coated substrate of claim 1 wherein the coating further comprises a
10 fourth oxide layer disposed above the third reflective layer.

 8. The coated substrate of claim 1 wherein the coating further comprises one
or more of a first barrier layer disposed above and contiguous to the first reflective layer,
a second barrier layer disposed above and contiguous to the second reflective layer, or a
15 third barrier layer disposed above and contiguous to the third reflective layer.

 9. The coated substrate of claim 8 wherein the one or more of the first,
second, or third barrier layers are each about 10 Å to 50 Å thick and comprise titanium.

20 10. The coated substrate of claim 1 wherein the coating further comprises a
functional top layer.

 11. The coated substrate of claim 10 wherein the functional top layer is about
50 Å to 300 Å thick and comprises one or more metals, metal oxides, metal nitrides,
25 metals having partial oxidation states, or a mixture thereof.

 12. An insulated glass unit, comprising:
at least two light transmissive substrates each having one or more major surfaces;
a substrate mounting unit containing the at least two substrates, wherein the
30 substrate mounting unit holds the at least two substrates in a substantially parallel
configuration, and the substrate mounting unit and at least two substrates collectively
form an enclosed space;

 a coating disposed on at least a portion of at least one of the major surfaces, the
coating comprising a plurality of discrete layers, including:

35 a first reflective layer;
a second reflective layer disposed above first reflective layer;
a third reflective layer disposed above second reflective layer;
a first oxide layer disposed between first and second reflective layers;

5 a second oxide layer disposed between second and third reflective layers;
 a third oxide layer disposed between the substrate and the first reflective
layer; and
 an alloy layer disposed between first and second reflective layers and
contiguous to the second reflective layer;
10 wherein the coating has a thickness of about 1000 Å to 4000 Å.

13. The insulated glass unit of claim 12 wherein the coating is disposed
within the enclosed space.

15 14. The insulated glass unit of claim 13 wherein the coating is disposed on an
outermost substrate of the at least two substrates.

15 15. The insulated glass unit of claim 13 wherein the coating is disposed on an
innermost substrate of the at least two substrates.

20 16. A method of coating a light transmissive substrate, the method comprising
sputtering onto at least a portion of a major surface of the substrate, in order:
 a first reflective layer;
 a first oxide layer;
25 an alloy layer;
 a second reflective layer;
 a second oxide layer; and
 a third reflective layer;
 wherein a total thickness of the coating is about 1000 Å to 4000 Å.

30 17. The method of claim 16 further comprising one or more of sputtering a
third oxide layer before sputtering the first reflective layer or sputtering a fourth oxide
layer after sputtering the third reflective layer.

35 18. The method of claim 16 further comprising one or more of sputtering a
first barrier layer after sputtering the first reflective layer such that the first barrier layer
is contiguous to the first reflective layer, sputtering a second barrier layer after sputtering
the second reflective layer such that the second barrier layer is contiguous to the second

5 reflective layer, or sputtering a third barrier layer after sputtering the third reflective layer such that the third barrier layer is contiguous to the third reflective layer.

19. The method of claim 16 further comprising sputtering a functional top layer after sputtering the third reflective layer.

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20. The method of claim 16 wherein the sputtering is carried out in an apparatus comprising a plurality of sputtering zones, and wherein the substrate is conveyed within the apparatus through the plurality of sputtering zones.