[CLAIMS]

[Claim 1]

A solar cell module comprising:

a first substrate; and

a plurality of photoelectric conversion elements disposed on the first substrate, each of the plurality of photoelectric conversion elements including a first electrode, an electron transport layer, a perovskite layer, a hole transport layer, and a second electrode,

wherein, in at least two of the photoelectric conversion elements adjacent to each other, the hole transport layers are extended continuous layers, and wherein the first electrodes, the electron transport layers, and the perovskite layers in the at least two of the photoelectric conversion elements adjacent to each other are separated by the hole transport layer, and

the hole transport layer includes, as hole transport materials:

a polymer having a weight average molecular weight of 2,000 or more, or a compound having a molecular weight of 2,000 or more; and

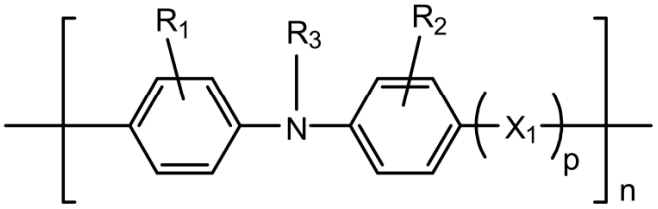
a compound having a molecular weight of less than 2,000.

[Claim 2]

The solar cell module according to claim 1,

wherein the polymer having a weight average molecular weight of 2,000 or more includes a recurring unit represented by General Formula (1) or (2) below:

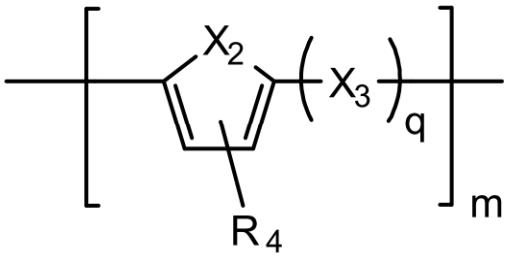
[Chem. 1]



General Formula (1)

where, in the General Formula (1), R_1 and R_2, which may be identical to or different from each other, each represent at least one selected from the group consisting of a hydrogen atom, an alkyl group, an aralkyl group, an alkoxy group, and an aryl group, R_3 represents one selected from the group consisting of an alkyl group, an aralkyl group, an aryl group, and a heterocyclic group, X_1 represents one selected from the group consisting of an alkylene group, an alkenyl group, an alkynyl group, an aryl group, and a heterocyclic group, n represents an integer that is 2 or more and allows the polymer represented by the General Formula (1) to have a weight average molecular weight of 2,000 or more, and p represents 0, 1, or 2; and

[Chem. 2]



General Formula (2)

where, in the General Formula (2), R_4 represents one selected from the group consisting of a hydrogen atom, an alkyl group, an aralkyl group, an alkoxy group, and an aryl group, X_2 represents one selected from the group consisting of an oxygen atom, a sulfur atom, and a selenium atom, X_3 represents one selected from the group consisting of an alkenyl group, an alkynyl group, an aryl group, and a heterocyclic group, m represents an integer that is 2 or more and allows the polymer represented by the General Formula (2) to have a weight average molecular weight

of 2,000 or more, and q represents 0, 1, or 2.

[Claim 3]

A solar cell module comprising:

a substrate; and

a plurality of photoelectric conversion elements disposed on the substrate, each of the plurality of photoelectric conversion elements including a first electrode, an electron transport layer, a perovskite layer, a hole transport layer, and a second electrode,

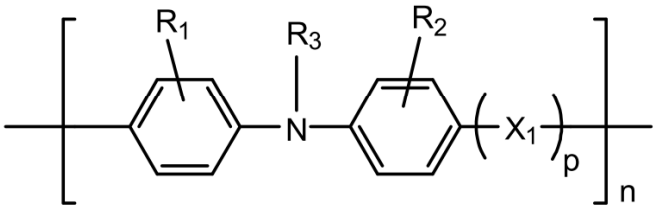
wherein, in at least two of the photoelectric conversion elements adjacent to each other, the hole transport layers are extended continuous layers, and wherein the first electrodes, the electron transport layers, and the perovskite layers in the at least two of the photoelectric conversion elements adjacent to each other are separated by the hole transport layer, and

the hole transport layer includes, as hole transport materials:

a polymer including a recurring unit represented by General Formula (1) or (2) below and having a weight average molecular weight of 2,000 or more, or a compound having a molecular weight of 2,000 or more; and

a compound having a molecular weight of less than 2,000,

[Chem. 3]

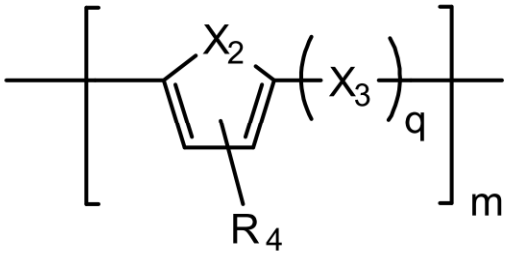


General Formula (1)

where, in the General Formula (1), R_1 and R_2, which may be identical to or different from each other, each represent at least one selected from the group consisting of a

hydrogen atom, an alkyl group, an aralkyl group, an alkoxy group, and an aryl group, R_3 represents one selected from the group consisting of an alkyl group, an aralkyl group, an aryl group, and a heterocyclic group, X_1 represents one selected from the group consisting of an alkylene group, an alkenyl group, an alkynyl group, an aryl group, and a heterocyclic group, n represents an integer that is 2 or more and allows the polymer represented by the General Formula (1) to have a weight average molecular weight of 2,000 or more, and p represents 0, 1, or 2; and

[Chem. 4]



General Formula (2)

where, in the General Formula (2), R_4 represents one selected from the group consisting of a hydrogen atom, an alkyl group, an aralkyl group, an alkoxy group, and an aryl group, X_2 represents one selected from the group consisting of an oxygen atom, a sulfur atom, and a selenium atom, X_3 represents one selected from the group consisting of an alkenyl group, an alkynyl group, an aryl group, and a heterocyclic group, m represents an integer that is 2 or more and allows the polymer represented by the General Formula (2) to have a weight average molecular weight of 2,000 or more, and q represents 0, 1, or 2.

[Claim 4]

The solar cell module according to claim 3,

wherein the compound having a molecular weight of less than 2,000 is one selected from the group consisting of spirobifluorene compounds, triarylamine compounds, and thiophene compounds.

[Claim 5]

The solar cell module according to any one of claims 1 to 4,

wherein, in the at least two of the photoelectric conversion elements adjacent to each other, the first electrode in one photoelectric conversion element and the second electrode in other photoelectric conversion element are electrically connected to each other through a conduction part penetrating through the hole transport layer.

[Claim 6]

The solar cell module according to any one of claims 1 to 5,

wherein, in the at least two of the photoelectric conversion elements adjacent to each other, a distance between the perovskite layer in one photoelectric conversion element and the perovskite layer in other photoelectric conversion element is 1 μm or more but 100 μm or less.

[Claim 7]

The solar cell module according to any one of claims 1 to 6, further comprising:

a second substrate disposed to face the first substrate so as to sandwich the plurality of photoelectric conversion elements; and

a sealing member that is disposed between the first substrate and the second substrate and is configured to seal the plurality of photoelectric conversion elements.

[Claim 8]

An electronic device comprising:

the solar cell module according to any one of claims 1 to 7; and

a device configured to be driven by electric power generated through photoelectric conversion of the solar cell module.

[Claim 9]

An electronic device comprising:

the solar cell module according to any one of claims 1 to 7;

a storage cell configured to store electric power generated through photoelectric conversion of the solar cell module; and

a device configured to be driven by at least one of the electric power generated through photoelectric conversion of the solar cell module and the electric power stored in the storage cell.

[Claim 10]

A power supply module comprising:

the solar cell module according to any one of claims 1 to 7; and

a power supply integrated circuit (IC).