CLAIMS

[Claim 1] A method of manufacturing a composite optical ceramic element including a first ceramic section and a second ceramic section joined to the first ceramic section, the method comprising:

a first process of preparing a first powder that contains a first transition element and is for the first ceramic section, and a second powder that is different from the first powder in a concentration of the first transition element and is for the second ceramic section;

a second process of disposing the first powder in a first region, disposing the second powder in a second region adjacent to the first region, and bringing the first powder and the second powder into contact with each other at a boundary portion between the first region and the second region to form a contacting state after the first process; and

a third process of sintering the first powder and the second powder while maintaining the contacting state to respectively form the first ceramic section and the second ceramic section from the first powder and the second powder after the second process, thereby forming a composite body,

wherein in the second process, the contacting state is formed by respectively disposing the first powder and the second powder in the first region and the second region in a state in which the first region and the second region are separated from each other with a partition member, and then removing the partition member, thickness of the partition member is 0.1 mm or more and 1 mm or less.

[Claim 2] The method of manufacturing a composite optical

ceramic element according to claim 1,

wherein the first powder and/or the second powder contain a raw material powder of a ceramic.

[Claim 3] The method of manufacturing a composite optical ceramic element according to claim 1 or 2,

wherein the second powder contains a second transition element different from the first transition element, and

in a case where the first powder contains the second transition element, a concentration of the second transition element in the first powder is different from a concentration of the second transition element in the second powder.

[Claim 4] The method of manufacturing a composite optical ceramic element according to any one of claims 1 to 3, further comprising:

a fourth process of forming an optical surface by polishing at least one surface of the composite body after the third process.

[Claim 5] The method of manufacturing a composite optical ceramic element according to any one of claims 1 to 4,

wherein in the second process, a contact region between the first powder and the second powder is formed in a tubular shape

by forming the contacting state by disposing the second powder in the second region formed in the tubular shape to surround the first region, and, upon removal of the partition member, the first powder and the second powder are mutually dispersed and partially mixed in the contact region.

[Claim 6] The method of manufacturing a composite optical ceramic element according to any one of claims 1 to 5, further comprising:

a fifth process of compression molding the first powder and the second powder while maintaining the contacting state after the second process and before the third process.

[Claim 7] The method of manufacturing a composite optical ceramic element according to any one of claims 1 to 6, wherein the composite body includes a buffer region in which the concentration of the first transition element gradually decreases in a direction from the first ceramic section toward the second ceramic section, and a length of the buffer region in said direction is 100 μm or more.