

【問 1】

Claims

1. A honeycomb-structured body for purifying exhaust gas discharged from an internal combustion engine, the honeycomb-structured body comprising:

a metal frame (2) that includes a metallic outer peripheral wall portion (20) formed in a cylindrical shape and a plurality of metal plate-like portions (21) provided inside the outer peripheral wall portion and in which the space inside the outer peripheral wall portion is divided by the plate-like portions into a plurality of divided spaces (S) that pass therethrough in the axial direction of the outer peripheral wall portion; and

honeycomb units (3) accommodated in the individual divided spaces,

wherein the honeycomb units have polygonal-grid cell walls (30), and a plurality of cells (31) partitioned by the cell walls and serving as flow paths of the exhaust gas are formed in the honeycomb units, and

wherein the honeycomb units are formed of a cocatalyst-containing base material (33) containing a cocatalyst comprising a composite oxide containing at least cerium and zirconium and an inorganic binder that binds particles of the cocatalyst together.

2. The honeycomb-structured body according to claim 1, wherein the content of the composite oxide in the honeycomb units is 50 to 98 mass %.

3. The honeycomb-structured body according to claim 1 or claim 2, wherein the metal frame is formed of a ferritic stainless steel or austenitic stainless steel.

【問 2】

[0004]

However, with respect to the lithium ion secondary battery equipped with a positive electrode containing a positive electrode active material which operates at a high potential, where the positive electrode potential in a fully charged state exceeds 4.25 V (hereinafter, also referred to as "high-voltage lithium ion secondary battery"), it has been found that oxidative decomposition of carbonate-based solvent contained in an electrolytic solution for a lithium ion secondary battery generally occurs at the surface of the positive electrode, resulting in the problems that the cycle life of the battery is reduced, and gas is generated in each part of the battery. Therefore, it is difficult to use

conventional electrolytes in a high-voltage lithium ion secondary battery, and there is a demand for a new electrolytic solution (electrolyte) whose oxidative decomposition at the positive electrode is suppressed.

[0005]

In Patent Document 2, a method for suppressing the decomposition of a non-aqueous electrolyte on the positive electrode side by using a non-aqueous electrolyte containing a specific phosphoric acid ester compound has been proposed. Specifically, improvement of oxidation resistance of the non-aqueous electrolyte has been attempted by adding 5 mass % of tris(2-propenyl) phosphate relative to the non-aqueous electrolyte.

In Patent Document 3, a method for improving the high-temperature cycle characteristics of a lithium-ion secondary battery by using a non-aqueous electrolyte containing a specific unsaturated phosphoric acid ester compound has been proposed. Specifically, improvement of the high-temperature cycle characteristics by adding 1 mass % of tris(2-propynyl) phosphate relative to the non-aqueous electrolyte has been described.

### 【問 3】

[0010] The scintillator crystal according to the present invention contains manganese, which is the heaviest element that forms the crystal. Manganese has an atomic number of 25; no other scintillator crystal composed only of such light elements is known. Conventional scintillator crystals have high absorption coefficients and thus, for example, absorb X-rays only near the incident surface, and the atoms inside the crystal do not contribute to the detection of X-rays. In contrast, the scintillator crystal according to the present invention has a low absorption coefficient and thus allows X-rays to penetrate deep into the scintillator crystal, so that a large number of atoms will contribute to scintillation.

[0011] Manganese is added in an amount of 0.1 to 5.0 mole percent, preferably 0.5 to 4.0 mole percent, per mole of the matrix. This amount serves merely as a guide for preparing the crystal and may differ slightly from the manganese content of the resulting crystal since it is not fully understood in what form manganese is present in the matrix.

### 【問 4】

#### Thermal Shrinkage

Straight lines with a length of 100 mm were drawn on test pieces (15 mm × 120 mm films) in the machine direction (MD) and the transverse direction (TD). After the test

pieces were left standing under standard conditions (23 °C and 50% RH) for two hours, the lengths of the straight lines before the test were measured. The test pieces were then left standing in a hot-air circulating oven set to 150 °C, 180 °C, or 200 °C for 30 minutes, with one corner of each test piece supported. The test pieces were then removed from the oven and were allowed to cool under standard conditions for two hours. Thereafter, the length of each straight line was measured, and the change in length was calculated from the length measured before the test. The thermal shrinkage  $R_2$  was calculated as the percent change in length after the test. Positive values of  $R_2$  indicate shrinkage.

Excellent: absolute value of  $R_2 \leq 1.5\%$  (best)

Good:  $1.5\% < \text{absolute value of } R_2 \leq 2.0\%$  (good)

Fair:  $2.0\% < \text{absolute value of } R_2 \leq 2.5\%$  (acceptable for practical use)

Poor:  $2.5\% < \text{absolute value of } R_2$  (unacceptable for practical use)