★★★ ＜知的財産翻訳検定【第4回<和文英訳>試験】＞答案用紙 ★★★

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科 目: 化　学

氏 名: 中島 拓

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＜選択問題解答＞

【問１】

1. An aluminum alloy cladding material for a heat exchanger having improved brazability, corrosion resistance and hot rolling workability,

the cladding material being a four-layered aluminum alloy cladding material comprising a core material, a sacrificial anode material, an intermediate material and a brazing material,

the core material being clad with the sacrificial anode material on one side and with the brazing material via the intermediate material on the other side,

the core material comprising Mn: 0.8 to 1.8 mass %, Mg: 0.1 to 1.0 mass %, the balance Al and inevitable impurities,

the sacrificial anode material comprising Mn:0.8 to 1.8 mass %、Zn:0.5 to 10 mass %, the balance Al and inevitable impurities,

the intermediate material comprising Mn:0.8 to 1.8 mass %, the balance Al and inevitable impurities,

the brazing material comprising Si:6 to 13 mass %, the balance Al and inevitable impurities.

2. The aluminum alloy cladding material of claim 1 wherein the intermediate material further comprises

one or more of Si:0.7 to 1.1 mass %, Fe:0.5 to 1.0 mass %, Cu:0.8 mass % or less, Zn:0.5 to 10 mass %,

Ni:0.1 to 1.0 mass %, Cr:0.02 to 0.3 mass %, Zr:0.02 to 0.3 mass %, and Ti:0.05 to 0.35 mass %,

provided that Cu and Zn are not present simultaneously.

3. The aluminum alloy cladding material of claim 1 or 2

wherein the ratio of the brazing material deformation resistance to the core material deformation resistance,

the ratio of the intermediate material deformation resistance to the core material

deformation resistance,
and the ratio of the core material deformation resistance to the sacrificial anode material deformation resistance are in a range of 0.7 to 1.4.

【問 2】

【０００２】

A carbon nanotube (CNT) is composed of carbon atoms and is a tubular material having diameter of nanometer order.
Much attention is paid to it as a nanomaterial. CNTs are produced by methods such as arc discharge, laser vaporization and chemical vapor deposition (CVD).
Japanese Patent No. 3183845 discloses that a carbon nanotube film is formed by heating silicon carbides at 1200 to 2200 degrees C in vacuo.

【０００３】

CNTs include single-wall carbon nanotubes composed of one layer of tubular graphite and multi-wall carbon nanotubes composed of concentric multilayer of the single-wall CNTs.
The single-wall CNTs show different electric conductivities according to the chirality of graphite.
Specifically, the CNTs are classified into armchair type, zigzag type, and chiral type, etc. The CNTs of armchair type exhibit metallic conductivity.
The CNTs of zigzag or chiral type exhibit semiconductor-like properties or metallic conductivity depending on their spiral structures.
The CNT exhibiting semiconductor-like properties (herein after called “carbon nanotube semiconductors”) may have an electron mobility ten times higher than that of silicon.
The use of carbon nanotube semiconductors may therefore lead to a device with extremely higher performance compared with the conventional silicon devices.

【問 3】

【００３１】

Example 1

Aerobic nitrifying granules were placed into a 1.5 L beaker as MLSS in a concentration of 2500 mg/L,

while ammonium-nitrogen was added in a concentration of 150 mg/L to initiate the experiment.

The concentration of nitrate nitrogen was measured over time to calculate the nitration rate.

In this experiment, the concentration of dissolved oxygen (DO) in each beaker was set to 0.2, 0.5, 1, 2, 3, 5, 8, 10, or 15 mgO/L,

which was adjusted by supplying air, nitrogen or oxygen while measuring DO in the reaction liquid.

The experiment was carried out at 20 degrees C.

【００３２】

Table 2 shows the result of studying the influence of DO on the nitration rate of the aerobic granules.

It was confirmed that higher DO in the reaction liquid increases the nitration rate.

It was also confirmed that DO of 0.5 mgO/L or more was able to achieve the nitration rate of about 10 mgN/L･Hr or more

and that the nitration rate was not further increased even when DO was adjusted to 8 mgO/L or more by using oxygen.