第8回知的財産翻訳検定試験＜第5回和文英訳＞1級／化学

【標準解答】

問題１

1.　A method of recovering metal components in slag generated during oxidative refining of chromium-containing steel, comprising the steps of:

reducing the slag from the oxidative refining of a chromium-containing molten steel charge in a refining furnace, such that the total chromium concentration in the slag is adjusted between 0.3 and 3.0 wt%;

adding boron oxide to the slag which is then cooled;

feeding the cooled slag into a blast furnace either directly or after sintering the slag;

recovering the metal components from the slag into molten iron in the blast furnace by reduction;

pouring the molten iron out of the blast furnace;

performing oxidative refining on the melt by supplying oxygen;

removing boron that has been recovered from the slag in the blast furnace into the molten iron; and

charging the molten iron into the refining furnace and refining the molten iron by decarburization.

2.　The method according to claim 1, wherein the specific consumption of oxygen supplied is 2Nm^3/ｔ for the molten iron.

問題２

[0002]

Utilization of carbon-neutral biomass is one of the approaches that need be taken to mitigate global warming. While various kinds of biomass exist, “wet” types such as sewage sludge, agricultural wastes, livestock excreta, wastes from food plants and garbage are produced in larger quantities than dry types such as wood and, hence, they hold a particularly great promise for effective utilization as resources after recycling. However, wet types of biomass have such a high water content that they are not easy to recycle. If fossil fuels were used for drying and other purposes, recycled wet biomass would not be able to contribute to mitigation of global warming.

[0003]

A method and apparatus for converting sewage sludge to fuel is described in JP 2005-319374 A. This technology is shown in FIG. 1; sewage sludge is supplied to a drying furnace 11’, thence to a carbonizing furnace 12’ to generate carbide that can be used as fuel. A heat source for drying and carbonization is provided by a sludge incinerator 31 that burns part of the sludge. Part of the generated carbide is supplied as fuel to the sludge incinerator 31 and this contributes to saving on the use of a fossil fuel in the sludge incinerator 31.

問題３

[0035]

Example 1

An electrode substrate 1, or a glass plate having an ITO anode 2 formed thereon, was overlaid with thin films by vacuum evaporation in the following order: CuPc (a hole injection layer) 200 Å thick,

acrylate-modified αNPD (a hole transport layer) 200 Å thick, acrylate-modified Alq3 (a light-emitting layer having an electron injection and transport capability) 200 Å thick, and aluminum 150 Å thick as a cathode 4. After deposition of all layers of CuPc, αNPD and Alq3, UV light (central wavelength, 365 nm; intensity, 100 mW) was applied for 10 seconds to crosslink the photo-reactive acrylate groups, thereby forming a polymerized organic layer 3.

[0036]

A voltage (6 V) was applied between the anode (ITO) 2 and the cathode (Al) 4 to generate a current (6.5 mA/cm^2), whereupon green light was emitted at a luminance of 400 cd/m^2. The device was evaluated for its durability at 85 °C; the half period of luminance was 2000 hr, indicating superior durability of the device at elevated temperature.

[0037]

Comparative Example 1

A device was fabricated as in Example 1, except that the acrylate-modified αNPD and Alq3 were replaced with αNPD and Alq3 free of acrylate groups and that no UV irradiation was effected. The device had a luminance of 400 cd/m^2 and its half period was 700 hr, indicating poor durability of the device at elevated temperature.