

# (12) International Application Status Report

Received at International Bureau: 28 August 2019 (28.08.2019)

Information valid as of: 27 May 2020 (27.05.2020)

Report generated on: 26 September 2020 (26.09.2020)

**(10) Publication number:**

WO2020/115953

**(43) Publication date:**

11 June 2020 (11.06.2020)

**(26) Publication language:**

Japanese (JA)

**(21) Application Number:**

PCT/JP2019/031990

**(22) Filing Date:**

14 August 2019 (14.08.2019)

**(25) Filing language:**

Japanese (JA)

**(31) Priority number(s):**

2018-238862 (JP)

**(31) Priority date(s):**

04 December 2018 (04.12.2018)

**(31) Priority status:**

Priority document received (in compliance with PCT Rule 17.1)

**(51) International Patent Classification:**

**C22C 19/00** (2006.01); **B22F 1/00** (2006.01); **B22F 1/02** (2006.01); **H01M 4/38** (2006.01)

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**(54) Title (EN):** HYDROGEN STORAGE MATERIAL, NEGATIVE ELECTRODE AND NICKEL HYDROGEN SECONDARY BATTERY

**(54) Title (FR):** MATÉRIAU DE STOCKAGE D'HYDROGÈNE, ÉLECTRODE NÉGATIVE ET BATTERIE SECONDAIRE AU NICKEL-HYDROGÈNE

**(54) Title (JA):** 水素吸蔵材、負極、及びニッケル水素二次電池

**(57) Abstract:**

**(EN):** The present invention provides: a hydrogen storage material which is capable of improving the discharge characteristics of a nickel hydrogen secondary battery at low temperatures; and a negative electrode and a nickel hydrogen secondary battery, each of which uses this hydrogen storage material. This hydrogen storage material has a specific composition, while containing hydrogen storage alloy particles and a surface modification substance that adheres to the surfaces of the particles. With respect to the X-ray diffraction pattern of this hydrogen storage material, if the relative intensity of the maximum peak Pmax among the diffraction peaks in the range of  $2\theta = 42.00^\circ$  to  $44.00^\circ$  is taken as 100.00%, the relative intensity of the maximum peak P1 in the range of  $2\theta = 30.35^\circ$  to  $30.65^\circ$  is from 4.00% to 70.00% (inclusive), the relative intensity of the maximum peak P2 in the range of  $2\theta = 32.85^\circ$  to  $33.15^\circ$  is less than 60.00%, and the relative intensity of the maximum peak P3 in the range of  $2\theta = 51.65^\circ$  to  $51.95^\circ$  is less than 6.00%.

**(FR):** La présente invention concerne : un matériau de stockage d'hydrogène qui est capable d'améliorer les caractéristiques de décharge d'une batterie secondaire au nickel-hydrogène à basse température; et une électrode négative et une batterie secondaire au nickel-hydrogène, chacune utilisant ce matériau de stockage d'hydrogène. Le matériau de stockage d'hydrogène de l'invention présente une composition spécifique, tout en contenant des particules d'alliage de stockage d'hydrogène et une substance de modification de surface qui adhère aux surfaces des particules. En ce qui concerne le profil de diffraction X de ce matériau de stockage d'hydrogène, si l'on prend à 100,00 % l'intensité relative du pic maximal Pmax parmi les pics de diffraction situés entre les valeurs  $2\theta$  allant de  $42,00^\circ$  à  $44,00^\circ$ , l'intensité relative du pic maximal P1 dans la plage de  $2\theta$  allant de  $30,35^\circ$  à  $30,65^\circ$  est de 4,00 % à 70,00 % (inclus), l'intensité relative du pic maximal P2 dans la plage de  $2\theta$  allant de  $32,85^\circ$  à  $33,15^\circ$  est inférieure à 60,00 % et l'intensité relative du pic maximal P3 dans la plage de  $2\theta$  allant de  $51,65^\circ$  à  $51,95^\circ$  est inférieure à 6,00 %.

**(JA):** ニッケル水素二次電池の低温での放電特性を改善できる水素吸蔵材、並びにこの水素吸蔵材を用いた負極及びニッケル水素二次電池を提供する。この水素吸蔵材は水素吸蔵合金粒子と該粒子の表面に付着した表面修飾物質とを

含み、特定の組成を有する。この水素吸蔵材のX線回折パターンにおいて、 $2\theta=42.00^\circ\sim 44.00^\circ$ の範囲に現れる回折ピークのうち最大ピークPmaxの相対強度を100.00%としたとき、 $2\theta=30.35^\circ\sim 30.65^\circ$ の範囲に現れる最大ピークP1の相対強度が4.00%以上70.00%以下であり、 $2\theta=32.85^\circ\sim 33.15^\circ$ の範囲に現れる最大ピークP2の相対強度が60.00%未満であり、且つ $2\theta=51.65^\circ\sim 51.95^\circ$ の範囲に現れる最大ピークP3の相対強度が6.00%未満である。

#### **International search report:**

Received at International Bureau: 04 November 2019 (04.11.2019) [JP]

#### **International Report on Patentability (IPRP) Chapter II of the PCT:**

Not available

#### **(81) Designated States:**

AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

European Patent Office (EPO) : AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR

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