## REMARKS

Reconsideration of the Application is requested in view of the modifications above and remarks below. Claims 12-41 are pending in the Application. Applicants have amended Claims 12 and 21 to include subject matter similar to that of cancelled Claim 16.

Objections

The Office Action objected to the abstract of the disclosure because the disclosure does not commence on a separate sheet of paper. An ABSTRACT OF THE DISCLOSURE is being submitted on a separate sheet of paper. Reconsideration is requested.

The Office Action objected to Claim 18 indicating the element Sc is wrongly grouped with rare earth metals. Sc is a rare earth metal (see http://www.britannica.com/ebc/article?eu=401799, a copy is submitted herewith for convenience). Reconsideration is requested.

Rejections under 35 USC 102

1. Rejection of Claims 12-17, 21, 23 and 24 under 35 USC 102(b) as anticipated by US Pat. No. 5,518704 (Kelkar et al.).

The Office Action rejected Claims 12-17, 21, 23 and 24 under 35 USC 102(b) as anticipated by Kelkar et al. This rejection should be withdrawn in view of the amendments above and remarks below.

It is well settled that in order for a prior art reference to anticipate claim, the reference must disclose each and every element of claim with sufficient clarity to prove its existence in prior art. The disclosure requirement under 35 USC 102 presupposes knowledge of one skilled in art of claimed invention, but such presumed knowledge does not grant license to read into prior art reference

teachings that are not there. See *Motorola Inc. v. Interdigital Technology Corp.* 43 USPQ2d 1481 (1997 CAFC). It is also well-settled that a 35 USC 102 rejection must rest upon the literal teachings of the reference and that the teachings must disclose every element of the claimed invention in as complete detail as is contained in the claim (See. *Jamesbury Corp v. Litton Industrial Products, Inc.* 225 USPQ, 253, 256 (CAFC 1985); *Kalman v. Kimberly-Clark Corp* 218 USPQ 781, 789 (Fed. Cir. 1983)).

In view of the amendments above, the remarks below are directed to the amended claims. Claims 12 and 21 have been amended. Claim 12 is directed to a nickel mixed hydroxide with Ni as the main element and having a layer structure. Claim 21 is directed to a process for preparing the nickel mixed hydroxide with Ni as the main element and haivng a layer structure. Claim 12 and 21 have been amended to include: a) at least one element $M_a$ from the group comprising Fe, Cr, Co, Ti, Zr and Cu which is present in two different oxidation states which differ by one electron in terms of the number of outer electrons, wherein the degree of oxidation $\alpha$ of the element $M_a$, defined according to the following formula (I), is from 0.25 to 0.75

$$\alpha = \frac{M_a^{+(x+1)}}{M_a^{+(x+1)} + M_a^{\pm x}} \quad \text{(I),}$$

wherein $M_a^{+(x+1)}$ means the molar quantity of the element $M_a$ in the higher oxidation state, and $M_a^{+(x)}$ the molar quantity of the element $M_a$ in the lower oxidation state, and x is a number between 1 and 3;

b) at least one element $M_b$ from the group comprising B, Al, Ga, In and rare earth metals present in the trivalent oxidation state;

c) optionally at least one element $M_c$ from the group comprising Mg, Ca, Sr, Ba and Zn present in the divalent oxidation state;

d) apart from the hydroxide, at least one additional anion selected from the group consisting of halides, carbonate, sulfate, acetate, oxalate, borate and phosphate in a quantity sufficient to preserve the electroneutrality of the mixed hydroxide; and

e) water of hydration in a quantity which stabilizes the relevant structure of the mixed hydroxide.

Support for this amendment is found in the Specification at page 5, lines 25-26 and, this amendment includes subject matter similar to cancelled Claim 16.

Kelkar et al. does not anticipate Applicants' invention. Kelkar et al. discloses synthesis of hydrotalcite materials (col. 2, lines 58-59), but does not disclose the degree of oxidation $\alpha$ of the element $M_a$, defined according to the following formula (I), is from 0.25 to 0.75

$$\alpha = \frac{M_a^{+(x+1)}}{M_a^{+(x+1)} + M_a^{+x}} \qquad (I),$$

wherein $M_a^{+(x+1)}$ means the molar quantity of the element $M_a$ in the higher oxidation state, and $M_a^{+(x)}$ the molar quantity of the element $M_a$ in the lower oxidation state, and x is a number between 1 and 3. Reconsideration is requested.

Inherency

Regarding Zeng et al., the Office Action's allegation that Zeng et al. discloses inherent features of Applicants' invention is not supported by the facts. The Office Action indicates that when metals such as Ni are partially substituted in the mixed-oxides and mixed-hydroxides with multivalent metals such as cobalt, cobalt would exhibit oxidation states in the lattice such as $2^+$ and $3^+$ by virtue of charge compensation in the multivalent system as shown by Zheng et al, the minimum higher oxidation level of 1% required by the limitation of $\alpha$ in Claim 16 would inherently be met (Office Action, page 4, para. 3, line 10 to page 5, line 1).

If an invention is anticipated under inherency, the invention must flow as a necessary conclusion from the prior art, not just a possible one. The fact that the prior art *may* possibly have the same features as the claimed invention will not substantiate a finding of inherency (*In re Oerlich*, 212 USPQ 323, 326 (CCCPA 1981)). And if a chemical compound is inherently disclosed in a reference, the USPTO must provide factual and technical grounds for establishing that the claimed invention inherently flows from the teachings of the prior art (*Ex parte Levy* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Int 1990)). It cannot be overemphasized that

35 USC 102(b) only deals with the literal teachings of a reference, not theoretical maybes or unrealized possibilities.

Zeng et al. discloses hydrotalcite-like compounds but does not teach or suggest the metal Ni partially substituted in the mixed-oxides and mixed-hydroxides. The mere possibility that Zeng et al. may have similar features of Applicants' invention is not sufficient to establish inherency. Thus, the "Ni mixed hydroxide with Ni as the main element and with a layer structure including a minimum higher oxidation level" of Applicants' invention cannot be inherently met. Neither, the Office Action, Kelkar et al. nor Zeng et al. have the facts necessary to support that Kelkar et al. or Zeng et al., either alone or in combination, inherently discloses features of Applicants' invention. Reconsideration is requested.

Claims 13-17 and 23-24 depend from Claims 12 and 21, respectively. Accordingly, Claims 13-17 and 23-24 are also believed to be allowable.

2. Rejection of Claims 12 -20 under 35 USC 102(b) as anticipated by US Pat. No. 6,156,454 (Bernard et al.).

Bernard et al. discloses a hydroxide containing mainly nickel with a layer based on nickel and yttrium (Abstract). Bernard et al does not disclose "the degree of oxidation $\alpha$ of the element $M_a$, defined according to the following formula (I), is from 0.25 to 0.75

$$\alpha = \frac{M_a^{+(x+1)}}{M_a^{+(x+1)} + M_a^{+x}} \qquad (I),$$

wherein $M_a^{+(x+1)}$ means the molar quantity of the element $M_a$ in the higher oxidation state, and $M_a^{+(x)}$ the molar quantity of the element $M_a$ in the lower oxidation state, and x is a number between 1 and 3" of Claims 12 and 21 of Applicatns' invention.

The Office Action indicates that "the mixed oxidation states of elements such as Co in the Ni-mixed hydroxide and ratio of the highest oxidation to total element Co would be inherent" for the reasons given in reference to Kelkar et al. As discussed above with reference to Kelkar et al., the Office Action and Zeng et al. also do not have the facts necessary to support that features of Applicants' invention

are inherently disclosed. Reconsideration is requested.

Claims 13-20 depend from Claim 12. Accordingly, Claims 13-20 are also believed to be allowable.

3. Rejection of Claims 12 -24 under 35 USC 102(b) as anticipated by EP 793285 (Matsuda et al.).

Matsuda et al. discloses a high performance composite hydroxide active material or a composite hydroxide containing Ni, Al and Co in a metallic ion molar ration of 8:1:1 (page 6, example 15). However, Matsuda et al. does not disclose the oxidation state of the Co ions present. Further, the reaction described in example 15 will not result in a mixed hydroxide including an element $M_a$ that is present in two different oxidation states of as least 25%. In fact, Matsuda does not disclose a degree of oxidation from 0.25 to 0.75 of Applicants' invention of Claims 12 and 21.

As with the other references cited in the Office Action, Matsuda et al. does not disclose each and every element of claim with sufficient clarity to prove its existence in prior art. The literal teachings of Matsuda et al. do not disclose every element of the claimed invention in as complete detail as is contained in amended Claims 12 and 21.

Further, the Office Action indicates that "the minimum α-value be inherent" for the reasons given in reference to Kelkar et al. As discussed above with reference to Kelkar et al., the Office Action and Zeng et al. do not have the facts necessary to support that features of Applicants' invention are inherently disclosed.

Claims 13-15, 17-20 and 22-24 depend from Claims 12 and 21, respectively. Accordingly, Claims 13-15, 17-20 and 22-24 are also believed to be allowable. Reconsideration is requested.

Rejections under 35 USC 103

The Office Action rejected Claims 12 -17, 21, 23 and 24 under 35 USC 103(a) as obvious over US Pat. No. 5,518,704 (Kelkar et al.), Claims 12-24 under 35 USC 103(a) as obvious over EP 793285 (Matsuda et al.), and Claims 12-20 under 35 USC 103(a) as obvious over US Pat. No. 6,156,454 (Bernard et al.). These rejections should be withdrawn in view of the amendments above and remarks

below.

It is well settled that to establish a *prima facie* case of obviousness, the USPTO must satisfy all of the following requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Second, the proposed modification must have had a reasonable expectation of success, as determined from the vantage point of one of ordinary skill in the art at the time the invention was made. *Amgen v. Chugai Pharmaceutical Co.* 18 USPQ 2d 1016, 1023 (Fed Cir, 1991), *cert. denied* 502 U.S. 856 (1991). Third, the prior art reference or combination of references must teach or suggest all of the limitations of the claims. *In re Wilson*, 165 USPQ 494, 496, (CCPA 1970).

In view of the amendments above, the remarks below are directed to the Claims as amended. Applicants' invention is directed to a nickel mixed hydroxide having a good cycle stability as well as an improved electrochemical utilization of the nickel ions. The Applicants determined that the crystal lattice of a nickel mixed metal hydroxide including an element $M_a$ exhibits defects if the element $M_a$ is present in two different oxidation states and the degree of oxidation is in a range ensuring that there is a substantial amount of the element $M_a$ in each oxidation state present. The present invention provides a system with the degree of oxidation of an element $M_a$ from about 25% to about 75%, and having such defects of the crystal lattice exhibits very good cycle stability in half-cell tests and a very high electronic utilization of the nickel ions of up to 1.5 electrons per nickel ion.

Matusuda et al. discloses facilitating charging at high temperature (Abstract); Kelkar et al. discloses the synthesis of novel sheet hydrotalcite materials (col. 2, ll. 58-59); and Bernard et al. discloses covering a hydroxide containing nickel with a layer based on nickel and yttrium (Abstract). Neither Matsuda et al., Kelkar et al. nor Bernard et al, alone or in combination, teach or suggest the importance of the degree of oxidation of an element $M_a$ with regard to cycle stability and electronic utilization of the nickel ions or the systems including an element $M_a$ in two different oxidation states wherein the degree of oxidation is from 25% to 75% would allow an

electronic utilization of up to 1.5 electrons per nickel ion. Further, there is no motivation for one skilled in the art to modify the teachings of Matsuda et al., Kelkar et al. or Benard et al. to arrive at Applicants' invention.

Accordingly, Claims 12-16 and 17-24 are believed to be allowable. Reconsideration is requested.

In view of the foregoing amendments and remarks, allowance of the pending claims is earnestly requested.

Respectfully submitted,

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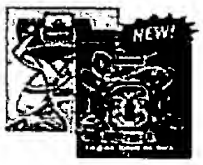






Britannica Concise Encyclopedia

# rare earth m

Britannica C



Any of a large class of chemical elements including scandium (atc number 21), yttrium (39), and the 15 elements from 57 (lanthanu to 71 (*see* lanthanides).

The rare earths themselves are pure or mixed oxides of these me originally thought to be quite scarce; however, cerium, the most plentiful, is three times as abundant as lead in the Earth's crust. metals never occur free, and the pure oxides never occur in mine These metals are similar chemically because their atomic structu are generally similar; all form compounds in which they have vale 3, including stable oxides, carbides, and borides.