



DECLARATION OF TRANSLATOR

I, Seongweon Park, hereby declare as follows:
I personally prepared the attached translation from Japanese into English of the patent that is entitled “層構造を有するリチウム遷移金属酸化物” in Japanese and “LITHIUM TRANSITION METAL OXIDE HAVING LAYERED STRUCTURE” in English (also attached). This is the Japanese patent application number “P2010-47466A” from the Japanese patent gazette website.

1. The attached translation is, to the best of my knowledge, a true, full and accurate translation of the attached Japanese document.
2. I am competent to perform this translation, because I have 3.5 years of experience as a professional Japanese-to-English patent translator.
3. I declare under the penalty of perjury under the laws of the United States that the foregoing is true and correct; and further declare that I am aware that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 1001 of Title 18 of the United States Code.

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LITHIUM TRANSITION METAL OXIDE HAVING LAYERED STRUCTURE

[0030]

A particle that is composed of a plurality of crystallites and is in the smallest unit surrounded by grain boundaries when observed using an SEM (for example, 3000x magnification) is referred to as a “primary particle” in the present invention. Accordingly, primary particles include single crystals and polycrystals.

Furthermore, particles in which a plurality of primary particles aggregate so as to share part of respective peripheries (grain boundaries) thereof and that are independent from other particles are referred to as “secondary particles” or “aggregated particles” in the present invention.

ABSTRACT

[Problem] To provide a lithium transition metal oxide having a layered structure, being particularly capable of enhancing the output of batteries as a positive electrode active material of a battery to be installed in an electric automobile or hybrid automobile.

[Resolution Means] Proposed is a lithium transition metal oxide having a layered structure represented by the general formula $\text{Li}_{1+x}\text{M}_{1-x-y}\text{M}'_y\text{O}_{2-\delta}$ (in the formula, M is an element consisting of any element from among Mn, Co, and Ni, or a combination of two or more of these; M' is a transition element existing between Group 3 and Group 11 elements of the periodic table, or a combination of two or more thereof), wherein a crystal structure belongs to a trigonal (trigonal) of the space group R-3m, a oxygen site occupancy rate found using the Rietveld method is such that $0.982 < \text{oxygen site occupancy rate} \leq 0.998$, and a 3b site-6c site distance is such that $1.95 \text{ \AA} < 3b \text{ site-6c site distance} \leq 2.05 \text{ \AA}$.

[Selected Drawing] None