

Title (en)
MATERIAL FOR LITHIUM SECONDARY BATTERY OF HIGH PERFORMANCE

Title (de)
MATERIAL FÜR EINE SEKUNDÄRLITHIUMBATTERIE MIT HOHER LEISTUNG

Title (fr)
MATIÈRE POUR BATTERIE SECONDAIRE AU LITHIUM HAUTE PERFORMANCE

Publication
EP 2016636 A1 20090121 (EN)

Application
EP 07746385 A 20070507

Priority
• KR 2007002230 W 20070507
• KR 2006001739 W 20060510

Abstract (en)
[origin: WO2007129848A1] Provided is a lithium mixed transition metal oxide having a composition represented by Formula I of Li_xMyO_2 (M, x and y are as defined in the specification), wherein lithium ions intercalate into and deintercalate from mixed transition metal oxide layers ("MO layers") and some of MO layer-derived Ni ions are inserted into intercalation/deintercalation layers of lithium ions ("reversible lithium layers") thereby resulting in the interconnection between the MO layers. The lithium mixed transition metal oxide of the present invention has a stable layered structure and therefore exhibits improved stability of the crystal structure upon charge/discharge. In addition, a battery comprising such a cathode active material can exhibit a high capacity and a high cycle stability. Further, such a lithium mixed transition metal oxide is substantially free of water-soluble bases, and thereby can provide excellent storage stability, decreased gas evolution and consequently superior high-temperature stability with the feasibility of low-cost mass production.

IPC 8 full level
C01G 53/00 (2006.01); **H01M 4/02** (2006.01); **H01M 4/131** (2010.01); **H01M 4/48** (2010.01); **H01M 4/485** (2010.01); **H01M 4/50** (2010.01); **H01M 4/505** (2010.01); **H01M 4/52** (2010.01); **H01M 4/525** (2010.01); **H01M 4/58** (2006.01); **H01M 10/052** (2010.01); **H01M 10/36** (2010.01); **H01M 10/0525** (2010.01)

CPC (source: EP)
C01G 53/50 (2013.01); **H01M 4/131** (2013.01); **H01M 4/485** (2013.01); **H01M 4/505** (2013.01); **H01M 4/525** (2013.01); **H01M 10/052** (2013.01); **C01P 2002/54** (2013.01); **C01P 2002/72** (2013.01); **C01P 2002/77** (2013.01); **C01P 2006/11** (2013.01); **C01P 2006/40** (2013.01); **C01P 2006/80** (2013.01); **H01M 10/0525** (2013.01); **Y02E 60/10** (2013.01); **Y02P 20/129** (2015.11)

Citation (third parties)
Third party :
• US 2006233696 A1 20061019 - PAULSEN JENS M [KR], et al
• TRAN N. ET AL: "Layered $\text{Li}_{1+x}(\text{Ni}_{0.425}\text{Co}_{0.15})_{1-x}\text{O}_2$ Positive Electrode materials for lithium-ion batteries", JOURNAL OF THE ELECTROCHEMICAL SOCIETY, vol. 153, no. 2, 2006, pages A261 - A269, XP003024845

Cited by
US8426066B2; US8784770B2; US9412996B2; US9590235B2; US7939203B2; US7939049B2; US7943111B2; US8574541B2; US8450013B2; US8540961B2; US8795897B2; US8815204B2; US9416024B2; US9590243B2

Designated contracting state (EPC)
BE DE FI FR GB SE

Designated extension state (EPC)
AL BA HR MK RS

DOCDB simple family (publication)
WO 2007129848 A1 20071115; CN 101300696 A 20081105; CN 101300697 A 20081105; CN 101300698 A 20081105; CN 101300698 B 20110831; CN 102082261 A 20110601; CN 102983322 A 20130320; EP 2016636 A1 20090121; EP 2016636 A4 20100203; EP 2016637 A1 20090121; EP 2016637 A4 20100203; EP 2016637 B1 20180110; EP 2016638 A1 20090121; EP 2016638 A4 20100203; EP 2463941 A1 20120613; EP 2463941 B1 20200108; EP 2463942 A1 20120613; JP 2009536436 A 20091008; JP 2009536437 A 20091008; JP 2009536438 A 20091008; JP 5537929 B2 20140702; JP 5593067 B2 20140917; JP 5656402 B2 20150121; TW 200803019 A 20080101; TW 200804195 A 20080116; TW 200805751 A 20080116; TW 201218493 A 20120501; TW I356041 B 20120111; TW I360909 B 20120321; TW I360910 B 20120321; TW I463729 B 20141201; WO 2007129854 A1 20071115; WO 2007129860 A1 20071115

DOCDB simple family (application)
KR 2007002230 W 20070507; CN 200780002216 A 20070507; CN 200780002227 A 20070509; CN 200780002247 A 20070508; CN 201010610494 A 20070508; CN 201210434392 A 20070507; EP 07746385 A 20070507; EP 07746404 A 20070508; EP 07746420 A 20070509; EP 12158212 A 20070507; EP 12158214 A 20070509; JP 2009509425 A 20070507; JP 2009509428 A 20070508; JP 2009509431 A 20070509; KR 2007002251 W 20070508; KR 2007002267 W 20070509; TW 100124789 A 20070510; TW 96116282 A 20070508; TW 96116510 A 20070509; TW 96116638 A 20070510