

Title (en)
ANODES OF LITHIUM ION BATTERIES

Title (de)
ANODEN VON LITHIUM-IONEN-BATTERIEN

Title (fr)
ANODES DE BATTERIES À IONS LITHIUM

Publication
EP 3507844 A1 20190710 (DE)

Application
EP 16758165 A 20160830

Priority
EP 2016070405 W 20160830

Abstract (en)
[origin: WO2018041339A1] The invention relates to anodes of lithium ion batteries, the anodes comprising porous anode coatings with volumetric capacities of $\geq 800 \text{ mAh/cm}^3$ and current collectors, the porous anode coatings being based on at least one active material (AM) in the form of particles, at least one binder, optionally graphite, optionally at least one other electroconductive component and optionally at least one additive, where the particles containing active material consist of at least 90 wt. %, in relation to the total weight of the particles containing active material, of an element selected from the group comprising silicon (Si), tin (Sn) and lead (Pb), characterised in that the porous anode coatings have a porosity ϕ in the region of $0.9 * \Phi_{\text{Opt}} \leq \phi \leq 1.3 * \Phi_{\text{Opt}}$, in which Φ_{Opt} is determined according to the following formula $\Phi_{\text{Opt}} = \phi_{\text{AM}} * \alpha * K$ (I), where ϕ_{AM} is the volume percent of the non-lithiated active material in relation to the total volume of the non-lithiated porous anode coating, α is the lithiation degree of the active material in the porous anode coating and can have values of $0 < \alpha \leq 1$, and K represents the value of 3.00 for silicon, 2.44 for tin, and 2.22 for lead.

IPC 8 full level
H01M 4/134 (2010.01); **H01M 4/02** (2006.01); **H01M 4/38** (2006.01); **H01M 4/62** (2006.01); **H01M 10/052** (2010.01)

CPC (source: EP KR)
H01M 4/134 (2013.01 - EP KR); **H01M 4/386** (2013.01 - EP KR); **H01M 4/625** (2013.01 - EP KR); **H01M 4/38** (2013.01 - EP KR); **H01M 4/387** (2013.01 - EP KR); **H01M 10/052** (2013.01 - EP KR); **H01M 2004/021** (2013.01 - EP KR); **H01M 2004/027** (2013.01 - EP KR); **Y02E 60/10** (2013.01 - EP)

Citation (search report)
See references of WO 2018041339A1

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
WO 2018041339 A1 20180308; CN 109643789 A 20190416; CN 109643789 B 20230602; EP 3507844 A1 20190710; KR 102240050 B1 20210416; KR 20190042700 A 20190424

DOCDB simple family (application)
EP 2016070405 W 20160830; CN 201680088678 A 20160830; EP 16758165 A 20160830; KR 20197009264 A 20160830