



US 20230231129A1

(19) **United States**(12) **Patent Application Publication**
TESSIER et al.(10) **Pub. No.: US 2023/0231129 A1**(43) **Pub. Date: Jul. 20, 2023**(54) **USE OF LITHIUM SECONDARY
ELECTROCHEMICAL CELLS CONTAINING
A BLEND OF A LITHIUM NICKEL OXIDE
AND A LITHIUM MANGANESE IRON
PHOSPHATE FOR AUTOMOTIVE
APPLICATIONS**(71) Applicant: **SAFT**, Levallois-Perret (FR)(72) Inventors: **Cécile TESSIER**, BRUGES (FR);
Patrick BERNARD, BORDEAUX
(FR); **Kamen NECHEV**, Cockeysville,
MD (US); **Carine STEINWAY**,
Parkville, MD (US); **Xilin CHEN**,
Lutherville Timonium, MD (US);
Cédric GOUSSET, BORDEAUX (FR);
Sylvie HERREYRE,
SAINT-ANDRE-DE-CUBZAC (FR)(73) Assignee: **SAFT**, Levallois-Perret (FR)(21) Appl. No.: **18/002,596**(22) PCT Filed: **Jun. 23, 2021**(86) PCT No.: **PCT/EP2021/067124**

§ 371 (c)(1),

(2) Date: **Dec. 20, 2022**(30) **Foreign Application Priority Data**

Jun. 26, 2020 (FR) FR2006764

Publication Classification(51) **Int. Cl.****H01M 4/58** (2006.01)**H01M 10/052** (2006.01)**H01M 4/505** (2006.01)**H01M 4/525** (2006.01)**H01M 50/578** (2006.01)**H01M 50/581** (2006.01)(52) **U.S. Cl.**CPC **H01M 4/5825** (2013.01); **H01M 10/052**
(2013.01); **H01M 4/505** (2013.01); **H01M**
4/525 (2013.01); **H01M 50/578** (2021.01);
H01M 50/581 (2021.01); **H01M 2220/20**
(2013.01); **H01M 2004/021** (2013.01)

(57)

ABSTRACT

The use of a blend of a lithium nickel oxide and a lithium manganese iron phosphate as an active material composition in the cathode of a lithium secondary electrochemical cell for automotive applications, such as hybrid and electric vehicles. This blend allows decreasing the porosity of a lithium manganese iron phosphate-based cathode. It also allows improving the detectability of a gas release in the cell in case of an abnormal operation of the cell. It allows lowering the cell impedance at a low state of charge, typically less than 30%, and reducing the impedance increase of the cell during the cell lifespan.