

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMPEREX TECHNOLOGY LIMITED,
Petitioner,

v.

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.
Patent Owner.

U.S. Patent No. 10,741,828

Case IPR2023-TBD

**DECLARATION OF JENNIFER A. BABBITT
PURSUANT TO 37 C.F.R. 42.64(b)(2)**

I, Jennifer A. Babbitt, hereby declare under penalty of perjury as follows:

I. INTRODUCTION

1. I am an Electronic Services Librarian at Kirkland & Ellis LLP. I am making this declaration of my own personal knowledge.

2. I make this declaration in support of Petitioner's Petition for *Inter Partes* Review ("IPR") of U.S. Patent No. 10,741,828 ("the '828 Patent"). I make this declaration of my own personal knowledge.

II. QUALIFICATIONS

3. I obtained a master's degree in Library and Information Science from San Jose State University in 2013. In connection with that degree, my coursework focused on library operation and catalog management.

4. From 2012 to 2014, I worked as an Archive Consultant at the Golden Gate National Recreation Area. I assisted in the archival of Golden Gate National Recreation Area's documents and the maintenance of active division records. I also created finding aids for discrete collections and worked in preserving and arranging active records for multiple divisions within the Golden Gate National Recreation Area, including the superintendent's office.

5. From 2014 to present, I have been working as a Research Assistant at Kirkland & Ellis LLP. My primary responsibilities include the following:
(1) maintaining the library catalog, including by coordinating the cataloging of new

material and routing of serial publications; (2) working with outside vendors to maintain/update standing orders and facilitate new orders; (3) coordinating interlibrary loans; (4) cataloging and maintaining technical book collections; and (5) assisting with research and document retrieval.

6. Through my education and experience described above, I have interacted with and have become personally familiar with the Education Resources Information Center (ERIC) and its collection of education resources. I understand that ERIC is an online library of education resources maintained by the Institute of Education Sciences, which is a branch of the U.S. Department of Education. I have used and am familiar with ERIC, including by performing searches on its online database to find information about the availability of educational articles and other references, and by downloading these articles and references.

7. Through my education and experience described above, I have also interacted with and have become personally familiar with Semantic Scholar. I understand that Semantic Scholar is an online search engine for scholarly articles that aims to use artificial intelligence to provide summaries of scholarly articles across a variety of scientific disciplines. I have used and am familiar with Semantic Scholar, including by performing searches through its search engine to find information about the availability of scholarly articles, and by downloading these articles.

III. EXHIBITS TO THE PETITION

8. Exhibit 1005 is a true and correct copy of *Synergistic Effects of Coating and Doping for Lithium Ion Battery Cathode Materials: Synthesis and Characterization of Lithium Titanate-Coated LiCoO₂ with Mg Doping*, 186 *Electrochimica Acta*, 201–08 (2015), authored by Shim, et al. I obtained this record from <https://www.sciencedirect.com/science/article/abs/pii/S0013468615307180> on May 5, 2023. In that record, the publication date of Shim is December 2015.

9. Exhibit 1006 is a true and correct copy of *Interface Characterization of MgF₂-Coated LiCoO₂ Thin Films*, 230 *Solid State Ionics*, 86–91 (2013), authored by Hye Jin Lee & Yong Joon Park. I obtained this record from <https://www.sciencedirect.com/science/article/abs/pii/S0167273812004602> on May 5, 2023. In that record, the publication date of Lee & Park is January 2013.

10. Exhibit 1007 is a true and correct copy of *The Investigation of Ti-Modified LiCoO₂ Materials for Lithium Ion Battery*, 262 *Journal of Power Sources*, 136–139 (2014), authored by Yu, et al. I obtained this record from <https://www.sciencedirect.com/science/article/abs/pii/S0378775314003966> on May 5, 2023. In that record, the publication date of Yu is September 2014.

11. Exhibit 1009 is a true and correct copy of Van Schalkwijk & Scrosati, *Advances in Lithium-Ion Batteries* (2002). I accessed this eBook from <https://link.springer.com/book/10.1007/b113788> and the bibliographic information

states the print publication date is June 2002 and the eBook publication date is May 2007.

12. Exhibit 1010 is a true and correct copy of *TEM Study of Electrochemical Cycling-Induced Damage and Disorder in LiCoO₂ Cathodes for Rechargeable Lithium Batteries*, 146 Journal of the Electrochemical Society, 473–80 (1999), authored by Wang et al. I obtained this record from <https://iopscience.iop.org/article/10.1149/1.1391631/meta> on May 5, 2023. In that record, the publication date of February 1999. The article was purchased through the document delivery partner CCC RightFind at <https://www.rightfind.com/vlib/order/OpenURLReceive.aspx?action=order&doi=10.1149/1.1391631>.

13. Exhibit 1011 is a true and correct copy of *Effects of Al Doping on the Microstructure of LiCoO₂ Cathode Materials*, 130 Solid State Ionics, 47–56 (2001), authored by Myung et al. I obtained this record from <https://www.sciencedirect.com/science/article/pii/S0167273800008286?via%3Dihub> on June 2, 2023. In that record, the publication date of Myung et al. is January 2001.

14. Exhibit 1012 is a true and correct copy of *Electronic Conductivity of LiCoO₂ and its Enhancement by Magnesium Doping*, 144 J. Electrochem. Soc., 3164–68 (1997), authored by Tukamoto et al. I obtained this record from

<https://iopscience.iop.org/article/10.1149/1.1837976/meta> on May 5, 2023. In that record, the publication date of Tukamoto is September 1997. The article was purchased through the document delivery partner CCC RightFind at <https://www.rightfind.com/vlib/order/OpenURLReceive.aspx?action=order&doi=10.1149/1.1837976>.

15. Exhibit 1013 is a true and correct copy of *Effect of Mg-doping on the Structural and Electronic Properties of LiCoO₂: A First-Principles Investigation*, 171 Journal of Power Sources, 908–12 (2007), authored by Shi et al. I obtained this record from <https://www.sciencedirect.com/science/article/pii/S0378775307014863?via%3Dihub> on June 2, 2023. In that record, the publication date of Shi et al. is September 2007.

16. Exhibit 1014 is a true and correct copy of *Electrochemical and Electron Microscopic Characterization of Thin-Film LiCoO₂ Cathodes Under High-Voltage Cycling Conditions*, 119-121 Journal of Power Sources, 295-299 (2003), authored by Jang et al. I obtained this record from <https://www.sciencedirect.com/science/article/abs/pii/S0378775303001605> on May 5, 2023. In that record, the publication date of Jang is June 2003.

17. Exhibit 1015 is a true and correct copy of *A Transmission Electron Microscopy Study of Crack Formation and Propagation in Electrochemically Cycled*

Graphite Electrode in Lithium-Ion Cells, 196 Journal of Power Sources, 8719–27 (2011), authored by Bhattacharya et al. I obtained this record from <https://www.sciencedirect.com/science/article/pii/S0378775311011050> on May 5, 2023. In that record, the publication date of Bhattacharya is October 2011.

18. Exhibit 1016 is a true and correct copy of *MgAl₂O₄ Spinel-Coated LiCoO₂ as Long-Cycling Cathode Materials*, 146 Journal of Power Sources, 245–49 (2005), authored by Fey et al. I obtained this record from <https://www.sciencedirect.com/science/article/pii/S0378775305004118> on May 5, 2023. In that record, the publication date of Bhattacharya is August 2005.

19. Exhibit 1021 is a true and correct copy of *Surface Film Formation on Electrodes in a LiCoO₂/Graphite Cell: A Step by Step XPS Study*, 174 Journal of Power Sources, 462–68 (2007), authored by Dedryvère et al. I obtained this record from <https://www.sciencedirect.com/science/article/abs/pii/S0378775307012864> on May 5, 2023. In that record, the publication date of Dedryvère is December 2007.

20. Exhibit 1022 is a true and correct copy of *Development of Artificial Surface Layers for Thin Film Cathode Materials*, Material Chemistry, Université de Bordeaux; Technische Universität (Darmstadt, Allemagne) (2015) English, authored by Mercedes Alicia Carrillo Solano. I obtained this record from <https://theses.hal.science/tel-01327672/> on May 5, 2023. In that record, the publication date of Solano is October 2015.

21. Exhibit 1023 is a true and correct copy of *On the Capacity Fading of LiCoO₂ Intercalation Electrodes: The Effect of Cycling, Storage, Temperature, and Surface Film Forming Additives*, 47 *Electrochimica Acta*, 4291–306 (2002), authored by Aurbach et al. I obtained this record from <https://www.sciencedirect.com/science/article/pii/S0013468602004176?via%3Dihub> on June 2, 2023. In that record, the publication date of Aurbach is October 2002.

22. Exhibit 1024 is a true and correct copy of *Thermodynamic Aspects of Cathode Coatings for Lithium-Ion Batteries*, *Advanced Energy Materials*, 1400690 (2014), authored by Aykol et al. I obtained this record from <https://onlinelibrary.wiley.com/doi/abs/10.1002/aenm.201400690> on May 5, 2023. In that record, the publication date of Aykol is August 2014.

23. Exhibit 1025 is a true and correct copy of *Application of Fluorine-containing Solvents in High Voltage Operation*, 78 *Electrochemistry*, 345-348 (2010), authored by Kitagawa et al. I obtained this record from https://www.jstage.jst.go.jp/article/electrochemistry/78/5/78_5_345/_article on May 5, 2023. In that record, the publication date of Kitagawa is May 2010.

24. Exhibit 1026 is a true and correct copy of *Capacity-Fading Mechanisms of LiNiO₂-Based Lithium-Ion Batteries*, 156 *Journal of the Electrochemical Society*, A371-A377 (2009), authored by Muto et al. I obtained this record from <https://iopscience.iop.org/article/10.1149/1.3076137/meta> on May 5,

2023. In that record, the publication date of Muto is 2009. The article was purchased through the document delivery partner CCC RightFind at <https://www.rightfind.com/vlib/order/OpenURLReceive.aspx?action=order&doi=10.1149/1.3076137>.

25. Exhibit 1027 is a true and correct copy of *Role of AlF_3 Coating on $LiCoO_2$ Particles during Cycling to Cutoff Voltage above 4.5 V*, 156 Journal of the Electrochemical Society, A1005–A1010 (2009), authored by Sun et al. I obtained this record from <https://iopscience.iop.org/article/10.1149/1.3236501/meta> on May 5, 2023. In that record, the publication date of Sun is October 2009. The article was purchased through the document delivery partner CCC RightFind at <https://www.rightfind.com/vlib/order/OpenURLReceive.aspx?action=order&doi=10.1149/1.3236501..>

26. Exhibit 1028 is a true and correct copy of *Amorphous Metal Fluoride Passivation Coatings Prepared by Layer Deposition on $LiCoO_2$ for Li-Ion Batteries*, 27 Chemistry of Materials, 1917–1920 (2015), authored by Park et al. I obtained this record from <https://pubs.acs.org/doi/full/10.1021/acs.chemmater.5b00603> on May 5, 2023. In that record, the publication date of Park is March 2015.

27. Exhibit 1029 is a true and correct copy of *High Voltage Stability and Enhanced Electrochemical Performances of $LiCoO_2$ by CeF_3 Coating*, IEEE (2015), authored by Aboulaich et al. I obtained this record from

<https://ieeexplore.ieee.org/abstract/document/7454976> on May 5, 2023. In that record, the publication date of Aboulaich is December 2015.

28. Exhibit 1030 is a true and correct copy of *Performance Improvement of LiCoO₂ by MgF₂ Surface Modification and Mechanism Exploration*, 134 *Electrochimica Acta*, 347–54 (2014), authored by Bai et al. I obtained this record from <https://www.sciencedirect.com/science/article/abs/pii/S0013468614009359> on May 5, 2023. In that record, the publication date of Bai is July 2014.

IV. CONCLUSION

29. I declare under penalty of perjury under the laws of the United States of America that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of the Title 18 of the United States Code.

Date: June 4, 2023

Respectfully submitted,



Jennifer A. Babbitt