

EX 1020

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ASCEND ELEMENTS, INC.,
Petitioner,

v.

DUESENFELD GMBH,
Patent Owner.

Case No. _____

U.S. Patent No. 12,119,463

**DECLARATION OF SYLVIA D. HALL-ELLIS, PH.D., IN SUPPORT OF
PETITION FOR POST GRANT REVIEW OF U.S. PATENT NO. 12,119,463**

Mail Stop PATENT BOARD
Patent Trial and Appeal Board
U.S. Patent Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

I, Sylvia D. Hall-Ellis declare as follows:

I. INTRODUCTION

1. I have been retained as an expert by Ascend Elements, Inc. ("Ascend") to provide my expert opinion regarding the authenticity and public availability of several publications. My declaration sets forth my opinions in detail and provides the basis for my opinions regarding the public availability of these publications.

2. I reserve the right to supplement or amend my opinions, and bases for them, in response any additional evidence, testimony, discovery, argument, and/or other additional information that may be provided to me after the date of this declaration.

3. I am being compensated for my time spent working on this matter at my normal consulting rate of \$450 per hour, plus reimbursement for any additional reasonable expenses. My compensation is not in any way tied to the content of this declaration, the substance of my opinions, or the outcome of this litigation. I have no other interests in this proceeding or with any of the parties.

4. All of the materials that I considered are discussed explicitly in this declaration.

II. QUALIFICATIONS

5. I am currently an Adjunct Professor in the School of Information at San José State University. I obtained a Master of Library Science from the University of

North Texas in 1972 and a Ph.D. in Library and Information Science from the University of Pittsburgh in 1985. Over the last fifty-five years, I have held various positions in the field of library and information resources. I was first employed as a librarian in 1966 and have been involved in the field of library sciences since, holding numerous positions.

6. I am a member of the American Library Association (ALA) and its Association for Library Collections & Technical Services (ALCTS) Division (now known as CORE), and I served on the Committee on Cataloging: Resource and Description (which wrote the new cataloging rules) and as the chair of the Committee for Education and Training of Catalogers and the Competencies and Education for a Career in Cataloging Interest Group. I also served as the Chair of the ALCTS Division's Task Force on Competencies and Education for a Career in Cataloging. Additionally, I have served as the Chair for the ALA Office of Diversity's Committee on Diversity, as a member of the national Board of Directors for REFORMA, as a member of the Editorial Board for the ALCTS premier cataloging journal, Library Resources and Technical Services, a member of the Membership Committee for the Library Research Round Table (LRRT) of the American Library Association, and a member of the LRRT Nominating Committee. Currently I serve as a member of the CORE Margaret Mann Citation Committee.

7. I have also given over one hundred presentations in the field, including several on library cataloging systems and Machine-Readable Cataloging (“MARC”) standards. My current research interests include library cataloging systems, metadata, and organization of electronic resources.

8. I have been deposed thirty-eight times:

(1) Symantec Corp. v. Finjan, Inc., Petition for Inter Partes Review of U.S. Patent No. 7,613,926, IPR 2015-01892, May 26, 2016, on behalf of Symantec Corp.;

(2) Symantec Corp. v. Finjan, Inc., Northern District of California, 14-cv-299-HSG, on behalf of Symantec Corp., September 14, 2017;

(3) one deposition for ten matters: Intellectual Ventures I LLC v. AT&T Mobility LLC; AT&T Mobility II LLC, New Cingular Wireless Services, Inc., SBC Internet Services, Inc., Wayport, Inc., and Cricket Wireless LLC, C.A. No. 12-193 (LPS); Intellectual Ventures II LLC v. AT&T Mobility LLC; AT&T Mobility II LLC, New Cingular Wireless Services, Inc., SBC Internet Services, Inc., Wayport, Inc., and Cricket Wireless LLC, C.A. No. 13-1631 (LPS); Intellectual Ventures I LLC v. T-Mobile USA, Inc. and T-Mobile US, Inc., C.A. No. 13-1632 (LPS); Intellectual Ventures II LLC v. T-Mobile USA, Inc. and T-Mobile US, Inc., C.A. No. 13-1633 (LPS); Intellectual Ventures I LLC, v. Nextel Operations, Inc., Sprint Spectrum L.P., Boost Mobile, LLC and Virgin Mobile USA, L.P., C.A. No. 13-1634 (LPS); Intellectual Ventures II LLC v. Nextel Operations, Inc., Sprint Spectrum L.P., Boost

Mobile, LLC and Virgin Mobile USA, L.P., C.A. No. 13-1635 (LPS); Intellectual Ventures I LLC, v. United States Cellular Corporation, C.A. No. 13-1636 (LPS); Intellectual Ventures I LLC v. United States Cellular Corporation, C.A. No. 13-1637 (LPS); Intellectual Ventures II LLC v. AT&T Mobility LLC, AT&T Mobility II LLC, New Cingular Wireless Services, Inc., C.A. No. 15-799 (LPS); Intellectual Ventures I LLC v. T-Mobile USA, Inc. and T-Mobile US, Inc., C.A. No. 15-800 (LPS), on behalf of AT&T Mobility LLC; AT&T Mobility II LLC, Boost Mobile, LLC Cricket Wireless LLC, Nextel Operations, Inc., New Cingular Wireless Services, Inc., SBC Internet Services, Inc., Sprint Spectrum L.P., T-Mobile USA, Inc., T-Mobile US, Inc., United States Cellular Corporation Virgin Mobile USA, L.P., and Wayport, Inc., November 15, 2016;

(4) Hitachi Maxell, LTD., v. Top Victory Electronics (Taiwan) Co. Ltd., et al., Eastern District of Texas, 2:14-cv-1121 JRG-RSP, on behalf of Top Victory Electronics (Taiwan) Co. LTD, et. al., January 20, 2016;

(5) Sprint Spectrum, L.P. v. General Access Solutions, Ltd., Petition for Inter Partes Review of U.S. Patent No. 7,173,916, IPR 2017-01885, on behalf of Sprint Spectrum L.P., July 13, 2018;

(6) Nichia Corporation v. Vizio, Inc., Central District of California, 8:16-cv-00545; on behalf of Vizio, Inc., October 12, 2018;

(7) Intellectual Ventures I LLC, v. T-Mobile USA, Inc., T-Mobile US, Inc., Ericsson Inc., and Telefonaktiebolaget LM Ericsson, Middle District of Florida, 2:17-cv-00557 (JRG), on behalf of T-Mobile USA, Inc., T-Mobile US, Inc., Ericsson Inc., and Telefonaktiebolaget LM Ericsson, October 19, 2018;

(8) Pfizer, Inc. v. Biogen, Inc., Petition for Inter Partes Review of U.S. Patent No. 8,821,873, IPR 2017-01168, on behalf of Pfizer, November 3, 2018;

(9) Finjan, Inc. v. ESET, LLC and ESET SPOL. S.R.O., Southern District of California, 3:17-cv-00183-CAB-BGS, on behalf of ESET, January 15, 2019;

(10) Finjan, Inc. v. Cisco Systems, Inc., Northern District of California, 5:17-cv-00072-BLF-SVK, on behalf of Cisco Systems, Inc., September 6, 2019;

(11) Facebook, Inc., Instagram, LLC and Whatsapp Inc. v. Blackberry Limited for Inter Partes Review of U.S. Patent No. 9,349,120 B2, on behalf of Facebook, Inc., Instagram, LLC and Whatsapp Inc., December 20, 2019;

(12) 3Shape A/S and 3Shape Inc. v. Align Technology, Inc., Petition for Inter Partes Review of U.S. Patent No. 7,156,661, IPR 2020-00222 and IPR 2020-00223, August 10, 2020, on behalf of 3Shape A/S and 3Shape Inc.;

(13) Finjan Inc. v. Rapid7, Inc. and Rapid7 LLC, District of Delaware, 1:18-cv-01519-MN, September 15, 2020, on behalf of Rapid7 Inc. and Rapid7 LLC;

(14) VLSI Technology LLC v. Intel Corporation, Western District of Texas, 6:19-cv-00254, 6:19-cv-00255, 6:19-cv-00256, September 23, 2020, on behalf of the Intel Corporation;

(15) Finjan Inc. v. Sonicwall, Inc., Northern District of California, 5:17-cv-04467-BLFHRL, October 27, 2020, on behalf of Sonicwall, Inc.;

(16) VLSI Technology, LLC v. Intel Corporation, District of Delaware, 1:18-cv-00966-CFC-CJB, February 5, 2021, on behalf of the Intel Corporation;

(17) Unified Patents, LLC v. 3BCOM, LLC, Petition for Inter Partes Review of U. S. Patent 7,127,210, February 11, 2021, on behalf of Unified Patents;

(18) Finjan, Inc. v. Qualsys, Inc., Northern District of California, 4:18-cv-07229-YGR, March 1, 2021, on behalf of Qualsys, Inc.;

(19) Qualcomm, Inc. v. Monterey Research LLC, Petition for Inter Partes Review of U. S. Patent 6,534,805, May 6, 2021, on behalf of Qualcomm, Inc.;

(20) Hulu, LLC v. Sound View Innovations, LLC, Petition for Inter Partes Review of U. S. Patent 5,806,062, May 14, 2021, on behalf of Hulu, LLC;

(21) VLSI Technology LLC v. Intel Corporation, Western District of Texas, 6:19-cv-00254, 6:19-cv-00255 and 6:19-cv-00256, August 3, 2021, on behalf of Intel Corporation;

(22) Liquidia Technologies, Inc. v. United Therapeutics Corporation, Petition for Inter Partes Review of U. S. Patent 10,716,793 B2, October 20, 2021, on behalf of Liquidia Technologies, Inc.;

(23) EcoFactor, Inc. v. Google, Inc., Western District of Texas, 6:20-cv-00075 (ADA), 6:20-0078-ADA, and 6:20-cv-00080 ADA, October 27, 2021, on behalf of Google, Inc.;

(24) Liquidia Technologies, Inc. v. United Therapeutics Corporation, Petition for Inter Partes Review of U. S. Patent 10,716,793 B2, March 11, 2022, on behalf of Liquidia Technologies, Inc.;

(25) Juniper Networks, Inc. v. Swarm Technology LLC, Petition for Inter Partes Review of U. S. Patent 9,852,004, May 5, 2022, on behalf of Juniper Networks, Inc.;

(26) ParkerVision, Inc. v. Intel Corporation, Western District of Texas, 6:20-cv-108 (ADA), October 26, 2022, on behalf of the Intel Corporation;

(27) CommScope v. TQ Delta, Petition for Inter Partes Review of U. S. Patents 9,094,348 and 10,833,809, February 16, 2023, on behalf of CommScope;

(28) WSOU Investments, LLC d/b/a Brazos Licensing and Development v. Salesforce, Inc., Western District of Texas, 6:20-cv-01164-ADA, April 18, 2023, on behalf of Salesforce, Inc.;

(29) Regents of the University of Minnesota v. AT&T Mobility LLC, District of Minnesota, 14:cv-4999-JRT-TNL & 14-cv-4669-JRT-TNL, May 18, 2023, on behalf of AT & T Mobility LLC;

(30) VLSI Technology LLC v. Intel Corporation, Northern District of California, 5:17-cv-0571-BLF-NC, July 11, 2023, on behalf of Intel Corporation;

(31) Trustees of Purdue University v. ST Microelectronics, Western District of Texas, 6:21-cv-00727-ADA, July 27, 2023, on behalf of ST Microelectronics;

(32) Advanced Micro Devices, Inc. v. Realtek Semiconductor Corp., Petition for Inter Partes Review of U. S. Patents 7,936,245 & 9,590,582, August 10, 2023, on behalf of Advanced Micro Devices, Inc.;

(33) Motif Foodworks, Inc. v. Impossible Foods, Inc., Petition for Inter Partes Review of U. S. Patent 9,943,096, August 24, 2023, on behalf of Motif Foodworks, Inc.;

(34) Network System Technologies, LLC v. Texas Instruments, Inc., Eastern District of Texas, 2:22-cv-00482-RWS, March 20, 2024, on behalf of Texas Instruments, Inc.

(35) *Network System Technologies, LLC v. Texas Instruments, Inc.*, Eastern District of Texas, 2:22-cv-00482, May 22, 2024, on behalf of Texas Instruments, Inc.;

(36) *Pardalis Technology Licensing, LLC v. International Business Machines Corporation*, Eastern District of Texas, 2:22-cv-00452, May 23, 2024, on behalf of International Business Machines Corporation;

(37) *Meta Platforms, InstaGram, Inc., Whatsapp LLC, Facebook Technologies LLC, and Giphy, Inc. v. VL Collective IP LLC*, Petition for *Inter Partes Review* of U. S. Patent 7,436,980, July 18, 2024, on behalf of Meta Platforms, InstaGram, Inc., Whatsapp LLC, Facebook Technologies LLC, and Giphy, Inc.; and,

(38) *LCY Biotechnology Holding, Inc. v. RadiciChimica S.p.A*, Petition for *Inter Partes Review* of U. S. Patent 11,781,148, August 6, 2024, on behalf of LCY Biotechnology Holding, Inc.

9. My full curriculum vitae is attached hereto as Appendix A to this report.

III. PRELIMINARIES

A. Scope of Declaration and Legal Standards

10. I am not an attorney and will not offer opinions on the law. I am, however, rendering my expert opinion on the authenticity of the documents referenced herein and when and how each of these documents was disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, could have located the documents before October 20, 2016.

11. I am informed by counsel that a printed publication qualifies as publicly accessible as of the date it was disseminated or otherwise made available such that a person interested in and ordinarily skilled in the relevant subject matter could locate it through the exercise of ordinary diligence.

12. While I understand that the determination of public accessibility under the foregoing standard rests on a case-by-case analysis of the facts particular to an individual publication, I also understand that a printed publication is rendered “publicly accessible” if it is cataloged and indexed by a library such that a person interested in the relevant subject matter could locate it exercising reasonable diligence (i.e., I understand that cataloging and indexing by a library in a manner that permits a person of ordinary skill in the relevant subject matter to locate the publication is sufficient, though there are other ways that a printed publication may qualify as publicly accessible). One manner of sufficient indexing is indexing according to subject matter category. I understand that the cataloging and indexing by a single library of a single instance of a particular printed publication is sufficient, even if the single library is in a foreign country. I understand that, even if access to a library is restricted, a printed publication that has been cataloged and indexed therein is publicly accessible so long as a presumption is raised that the portion of the public concerned with the relevant subject matter would know of the printed publication. I also understand that the cataloging and indexing of information that

would guide a person interested in the relevant subject matter to the printed publication, such as the cataloging and indexing of an abstract for the printed publication, is sufficient to render the printed publication publicly accessible.

13. I understand that routine business practices, such as general library cataloging and indexing practices, can be used to establish an approximate date on which a printed publication became publicly accessible.

B. Persons of ordinary skill in the art

14. I am told by counsel that the subject matter of this proceeding relates generally to the processing of used batteries, particularly lithium-ion batteries.

15. I have been informed by counsel that a “person of ordinary skill in the art at the time of the invention” (POSITA) is a hypothetical person who is presumed to be familiar with the relevant field and its literature at the time of the inventions. This hypothetical person is also a person of ordinary creativity, capable of understanding the scientific principles applicable to the pertinent field.

16. I am told by counsel that persons of ordinary skill in this subject matter or art would have had at least a Bachelor's degree in electrical engineering, material science, chemical engineering, or an equivalent field, as well as at least 2 to 3 years of academic or industry experience in the recycling or processing of lithium-ion batteries.

17. It is my opinion that such a person would have been engaged in research, learning through study and practice in the field and possibly through formal instruction the bibliographic resources relevant to his or her research. Before October 20, 2016, such a person would have had access to a vast array of long-established print resources and a rich set of online references, regarding the development of methods, devices, and materials for industrial engineering, including in the context of recycling batteries, in particular lithium ion batteries.

18. Based on my experience working in research libraries with researchers having the qualifications described above, or even lesser qualifications, it is my opinion that such researchers would have been able to locate the material discussed herein on their own or with the assistance of a research librarian with relative ease using the tools and resources described herein.

IV. LIBRARY CATALOGING PRACTICES

19. In preparing this declaration, I used authoritative databases, such as the OCLC bibliographic database, the Library of Congress Online Catalog, and the Library of Congress Subject Authorities, to confirm citation details of the various publications discussed. Unless I note otherwise below in reference to a specific serial publication, it is my expert opinion that this standard protocol was followed for the serial publication discussed below.

20. Based on my experience working in research libraries with researchers having the qualifications described above, or even lesser qualifications, it is my opinion that such researchers would have been able to locate the material discussed herein on their own or with the assistance of a research librarian with relative ease using the tools and resources described herein.

21. A researcher may discover material relevant to his or her topic in a variety of ways. One common means of discovery is to search for relevant information in an index of periodical and other publications. Having found relevant material, the researcher will then normally obtain it online, look for it in libraries, or purchase it from the publisher, a bookstore, a document delivery service, or other provider. Sometimes, the date of a document's public accessibility will involve both indexing and library date information. However, date information for indexing entries is often unavailable. This is especially true for online indices.

22. Indexing services use a wide variety of controlled vocabularies to provide subject access and other means of discovering the content of documents. The formats in which these access terms are presented vary from service to service.

23. Online indexing services commonly provide bibliographic information, abstracts, and full-text copies of the indexed publications, along with a list of the documents cited in the indexed publication. These services also often provide lists of publications that cite a given document. A citation of a document is evidence that

the document was publicly available and in use by researchers no later than the publication date of the citing document.

24. Before the widespread development of online databases to index articles in journals, magazines, conference papers, and technical reports, libraries purchased printed volumes of indices. Graduate library school education mandated that students learn about the bibliographic control of disciplines, the prominent indexing volumes, and searching strategies required to use them effectively and efficiently. Half of the courses that I studied in library school were focused on bibliography and resources in academic disciplines.

25. Librarians consulted with information seekers to verify citations, check availability in union catalogs, printed books catalogs, the OCLC database, and make formal requests for materials (e.g., books, conference proceedings, journal articles). Requests were transmitted using Telex machines, rudimentary email systems, and the United States Postal Service. During my career, I have performed and supervised staff who handled these resource sharing tasks.

26. A major firm known for the breadth of subjects and comprehensive treatment in the preparation of index volumes, the H. W. Wilson Company offered these reference resources since the firm was founded in 1898. The *Reader's Guide to Periodical Literature* is one of the best-known titles available from H. W. Wilson. Each volume includes a comprehensive index for 300 of the most popular

and important periodicals published in the United States and Canada. Information seekers have subject access expressed in plain language terminology, author access, and cross references to find the desired results from their searches. The family of index titles included *Science & Technology Index*, *Business Periodicals*, *Applied Science & Technology Index*, *Humanities Index*, *Biological & Agricultural Index*, and *Industrial Arts Index*. These printed indices have been superseded by digital database offerings available to information seekers through Ebsco.

27. Online indexing services such as Google Scholar¹ or ScienceDirect² commonly provide bibliographic information, abstracts, and full-text copies of the indexed publications, along with a list of the documents cited in the indexed publication. These services also often provide lists of publications that cite a given document.

28. A researcher may discover material relevant to his or her topic in a variety of ways. A citation of a document by another is evidence that the document was publicly available and in use no later than the publication date of the citing document. One common means of discovery is to search for relevant information in an index of periodicals and other publications. Having found relevant material, the researcher will then normally obtain it online, look for it in libraries, or purchase

¹ <https://scholar.google.com/>

² <https://www.sciencedirect.com/>

it from a publisher, a bookstore, a document delivery service, or other provider. Sometimes, the date of a document's public accessibility will involve both indexing and library date information. However, date information for indexing entries is often unavailable. This is especially true for online indices.

29. Indexing services use a wide variety of controlled vocabularies to provide subject access and other means of discovering the content of documents. The Library of Congress Subject Authorities includes standard forms of terms and cross references that are included in bibliographic records. Subject headings are terms that an individual seeking a document regardless of format can enter in the search bar of the online catalog. Subjects also connect an authenticated term (one included in the Library of Congress subject headings list) with related, broader, and narrower terms. The formats in which these access terms are presented vary from service to service.

30. Online indexing services commonly provide bibliographic information, abstracts, and full-text copies of the indexed publications, along with a list of the documents cited in the indexed publication. These services also often provide lists of publications that cite a given document. A citation of a document is evidence that the document was publicly available and in use by researchers no later than the publication date of the citing document. Prominent indexing services include

Scopus, the *IEEE Xplore* database, the *ACM Digital Library*, *Google Scholar*, and the *Internet Archive*.

V. MARC RECORDS AND THE ONLINE LIBRARY CATALOG

31. I am fully familiar with the library cataloging standard known as the MARC standard, which is an industry-wide standard method of storing and organizing library catalog information.³ MARC was first developed in the 1960s by the Library of Congress. A MARC-compatible library is one that has a catalog consisting of individual MARC records for each of its items. Today, MARC is the primary communications protocol for the transfer and storage of bibliographic metadata in libraries.⁴

³ The full text of the standard is available from the Library of Congress at <http://www.loc.gov/marc/bibliographic/>

⁴ Almost every major library in the world is MARC-compatible. See, e.g., MARC Frequently Asked Questions (FAQ), Library of Congress, <https://www.loc.gov/marc/faq.html> (last visited February 17, 2025) (“MARC is the acronym for MACHine-Readable Cataloging. It defines a data format that emerged from a Library of Congress-led initiative that began nearly fifty years ago. It provides the mechanism by which computers exchange, use, and interpret bibliographic information, and its data elements make up the foundation of most library catalogs used today.”). MARC is the ANSI/NISO Z39.2-1994 (reaffirmed 2016) standard for Information Interchange Format.

32. Since at least the early 1970s and continuing to the present day, MARC has been the primary communications protocol for the transfer and storage of bibliographic metadata in libraries.⁵ As explained by the Library of Congress:

You could devise your own method of organizing the bibliographic information, but you would be isolating your library, limiting its options, and creating much more work for yourself. Using the MARC standard prevents duplication of work and allows libraries to better share bibliographic resources. Choosing to use MARC enables libraries to acquire cataloging data that is predictable and reliable. If a library were to develop a “home-grown” system that did not use MARC records, it would not be taking advantage of an industry-wide standard whose primary purpose is to foster communication of information.

Using the MARC standard also enables libraries to make use of commercially available library automation systems to manage library operations. Many systems are available for libraries of all sizes and are designed to work with the MARC format. Systems are maintained and improved by the vendor so that libraries can benefit from the latest advances in computer technology. The MARC standard also allows libraries to replace one system with another with the assurance that their data will still be compatible.

Why Is a MARC Record Necessary? LIBRARY OF CONGRESS.⁶

⁵ A complete history of the development of MARC can be found in MARC: Its History and Implications by Henrietta D. Avram (Washington, DC: Library of Congress, 1975) and available online from the Hathi Trust (<https://babel.hathitrust.org/cgi/pt?id=mdp.39015034388556;view=1up;seq=1>; last visited February 17, 2025).

⁶ <http://www.loc.gov/marc/umb/um01to06.html#part2>

33. Thus, almost every major library in the world is MARC-compatible. *See, e.g.,* MARC Frequently Asked Questions (FAQ), LIBRARY OF CONGRESS.⁷ (“MARC is the acronym for MACHine-Readable Cataloging. It defines a data format that emerged from a Library of Congress-led initiative that began fifty years ago. It provides the mechanism by which computers exchange, use, and interpret bibliographic information, and its data elements make up the foundation of most library catalogs used today.”). MARC is the ANSI/NISO Z39.2-1994 standard (reaffirmed in 2016) for Information Interchange Format. The full text of the standard is available from the Library of Congress.⁸

34. A MARC record comprises several fields, each of which contains specific data about the work. Each field is identified by a standardized, unique, three-digit code corresponding to the type of data that follow. For example, a work’s title is recorded in Field 245; the primary author of the work is transcribed in Field 100; an item’s International Standard Book Number (“ISBN”) consisting of ten or thirteen digits is transcribed in Field 020; an item’s International Standard Serial Number (“ISSN”) is transcribed in Field 022; the Library of Congress classification notation is recorded in Field 050; and the publication date is recorded in Field 260 under the subfield “c.” If a work is a periodical, then its publication frequency is

⁷ <https://www.loc.gov/marc/faq.html>

⁸ <http://www.loc.gov/marc/bibliographic/>

recorded in Field 310, and the publication dates (e.g., the first and last publication) are recorded in Field 362, which is also referred to as the enumeration/chronology field.⁹

35. The library that created the record is recorded in Field 040 in subfield “a” with a unique library code. When viewing the MARC record online via Online Computer Library Center’s (“OCLC”) bibliographic database, hovering over this code with the mouse reveals the full name of the library. I used this method of “mousing over” the library codes in the OCLC database to identify the originating library for the MARC records discussed in this declaration. Where this “mouse over” option was not available, I consulted the Directory of OCLC Libraries to identify the institution that created the MARC record.¹⁰

36. MARC records also include several fields that include subject matter classification information. An overview of MARC record fields is available through the Library of Congress.¹¹ For example, 6XX fields are termed “Subject Access Fields.”¹² Among these, for example, is the 650 field; this is the “Subject Added Entry – Topical Term” field.¹³ The 650 field is a “[s]ubject added entry in which the

⁹ <http://www.loc.gov/marc/bibliographic/bd3xx.html>

¹⁰ <https://www.oclc.org/en/contacts/libraries.html>

¹¹ <http://www.loc.gov/marc/bibliographic/>

¹² <http://www.loc.gov/marc/bibliographic/bd6xx.html>

¹³ <http://www.loc.gov/marc/bibliographic/bd650.html>

entry element is a topical term.” These entries “are assigned to a bibliographic record to provide access according to generally accepted thesaurus- building rules (e.g., Library of Congress Subject Headings (LCSH), Medical Subject Headings (MeSH)).” *Id.* Further, MARC records include call numbers, which themselves include a classification number. For example, the 050 field is the “Library of Congress Call Number.”¹⁴ A defined portion of the Library of Congress Call (LCC) Number is the classification number, and “source of the classification number is Library of Congress Classification and the LC Classification-Additions and Changes.” Thus, included in the 050 field is a subject matter classification. Further, the 082 field is the “Dewey Decimal Call Number.”¹⁵ A defined portion of the Dewey Decimal Call (DDC) Number is the classification number, and “source of the classification number is the Dewey Decimal Classification and Relative Index.” Thus, included in the 082 field is a subject matter classification. Each item in a library has a single classification number. A library selects a classification scheme (e.g., the Library of Congress classification scheme just described or a similar scheme such as the Dewey Decimal classification scheme) and uses it consistently. When the Library of Congress assigns the LCC classification number, it appears as part of the 050 field. When the Library of Congress assigns the DDC classification

¹⁴ <http://www.loc.gov/marc/bibliographic/bd050.html>

¹⁵ <http://www.loc.gov/marc/bibliographic/bd082.html>

number, it appears as part of the 082 field. If a local library assigns the classification number, it appears in a 090 field. In either scenario, the MARC record includes a classification number that represents a subject matter classification.

A. OCLC

37. The OCLC was created “to establish, maintain and operate a computerized library network and to promote the evolution of library use, of libraries themselves, and of librarianship, and to provide processes and products for the benefit of library users and libraries, including such objectives as increasing availability of library resources to individual library patrons and reducing the rate of rise of library per-unit costs, all for the fundamental public purpose of furthering ease of access to and use of the ever-expanding body of worldwide scientific, literary and educational knowledge and information.”¹⁶ Among other services, OCLC and its members are responsible for maintaining the WorldCat database,¹⁷ used by independent and institutional libraries throughout the world.

38. OCLC also provides its members online access to MARC records through its OCLC bibliographic database. When an OCLC member institution

¹⁶ Third Article, Amended Articles of Incorporation of OCLC Online Computer Library Center, Incorporated (available at <https://www.oclc.org/content/dam/oclc/membership/articles-of-incorporation.pdf>).

¹⁷ <http://www.worldcat.org/>

acquires a work, it creates a MARC record for this work in its computer catalog system in the ordinary course of its business. MARC records created at the Library of Congress are directly uploaded or may be tape-loaded into the OCLC database through a subscription to MARC Distribution Services daily or weekly. Once the MARC record is created by a cataloger at an OCLC member institution or is tape-loaded from a participating institution, the MARC record is then made available to any other OCLC members online, and therefore made available to the public. Accordingly, once the MARC record is created by a cataloger at an OCLC member institution or is tape-loaded from the Library of Congress or another library anywhere in the world, any publication corresponding to the MARC record has been cataloged and indexed according to its subject matter such that a person interested in that subject matter could, with reasonable diligence, locate and access the publication through any library with access to the OCLC bibliographic database or through the Library of Congress.

39. When an OCLC member institution creates a new MARC record, OCLC automatically supplies the date of creation for that record. The date of creation for the MARC record appears in the fixed field (008), characters 00 through 05. The MARC record creation date reflects the date on which, or shortly after which, the item was first acquired or cataloged. Initially, field 005 of the MARC record is automatically populated with the date the MARC record was created in

year, month, day format (YYYYMMDD) (some of the newer library catalog systems also include hour, minute, second (HHMMSS)). Thereafter, the library's computer system may automatically update the date in field 005 every time the library updates the MARC record (e.g., to reflect that an item has been moved to a different shelving location within the library). Field 005 is visible when viewing a MARC record via an appropriate computerized interface. The date upon which the most recent update to field 005. Thus, when an item's MARC record has been printed to hardcopy—as is the case with the exhibits to this report—the date reflected in field 008 is necessarily on or after the date the library first cataloged and indexed the underlying item.

40. Once one library has cataloged and indexed a publication by creating a MARC record for that publication, other libraries that receive the publication do not create additional MARC records—the other libraries instead rely on the original MARC record. They may update or revise the MARC record to ensure accuracy, but they do not replace or duplicate it. This practice does more than save libraries from duplicating labor. It also enhances the accuracy of MARC records. Further, it allows librarians around the world to know that a particular MARC record is authoritative (in contrast, a hypothetical system wherein duplicative records were created would result in confusion as to which record is authoritative).

41. The date of creation of the MARC record by a cataloger at an OCLC member institution reflects when the underlying item is accessible to the public. Upwards of two-thirds to three-quarters of book sales to libraries come from a jobber or wholesaler for online and print resources. These resellers make it their business to provide books to their customers as fast as possible, often providing turnaround times of only a single day after publication. Libraries purchase a significant portion of the balance of their books directly from publishers themselves, which provide delivery on a similarly expedited schedule. In general, libraries make these purchases throughout the year as the books are published and shelve the books as soon thereafter as possible in order to make the books available to their patrons. Thus, books are generally available at libraries across the country within just a few days of publication.

42. In preparing this declaration, I used authoritative databases, such as the OCLC bibliographic database, WorldCat, and the Library of Congress online catalog, to confirm citation details of the various publications discussed.

VI. PUBLICATIONS

A. Document 1: Exhibit 1015 (“Perry”)

43. Attached hereto as Exhibit 1015 is an excerpt from a book titled *Perry's Chemical Engineers' Handbook*, 7th edition, edited by Robert H. Perry, Don W. Green, and James O. Maloney (hereafter “Perry”) and issued by McGraw Hill with

a 1997 copyright date. Exhibit 1015 is a true and correct copy of the title page, copyright page, and table of contents for Chapter 12 as held by the Karl F. Wendt Engineering Library at the University of Wisconsin – Madison. The excerpt is titled “Solid-Drying Fundamentals” on pages 12-25 and 12-65. I obtained Exhibit 1015 from the Karl F. Wendt Engineering Library at the University of Wisconsin – Madison. The excerpted text in Exhibit 1015 is complete; no pages are missing, and the text on each page appears to flow seamlessly from one page to the next; further, there are no visible alterations to the document. Exhibit 1015 is a true and correct copy in a condition that creates no suspicion about its authenticity.

44. Attached hereto as Attachment 1A is a true and correct copy of the MARC record for this monograph from the Karl F. Wendt Engineering Library at the University of Wisconsin – Madison online catalog. Library ownership is indicated by the presence of the library’s code (“GZM”) in field 049. The library continues to update this MARC record and enhanced the MARC record to meet current cataloging rules. The most recent enhancement to the MARC record occurred on March 22, 2018, as shown in field 008 (“20180322”). I personally identified and retrieved the library catalog record which is Attachment 1A.

45. The International Standard Book Number (ISBN) on Exhibit 1015 (0-07-04984-5) matches the ISBN in field 020 of Attachment 1A. Therefore, Exhibit 1001 is the same book as the one that the cataloger at the Library of Congress used

to create the MARC record that is Attachment 1B. The presence of bibliographic data describing the Perry book on the copyright page (Exhibit 1015, page 2) indicates that the book titled *Perry's Chemical Engineers' Handbook*, 7th edition, was cataloged at the Library of Congress as part of the Cataloging in Publication (CIP) Program.¹⁸

46. Attached hereto as Attachment 1C is a true and correct copy of the MARC record for the book titled *Perry's Chemical Engineers' Handbook*, 7th edition, obtained from the OCLC bibliographic database. I personally identified and retrieved the MARC record that is Attachment 1C. As previously noted, the library that created the record is recorded in field 040 with a unique library code. For Attachment 1C, that library code is “DLC,” which means that the MARC record for this book was created at the Library of Congress as part of the CIP Program. A cataloger prepares basic information about the forthcoming book which is included on the verso of the title page (also called the copyright page). The information is provided to save time needed for the cataloging process at the library after the book is purchased. The CIP data includes the author (field 100), title and subtitle (field 245), ISBN (field 022), suggested subject headings (field 650), classification numbers for the Library of Congress classification number (field 050), and the

¹⁸ <https://www.loc.gov/publish/cip/>

Dewey Decimal classification number (field 082). These data elements are included in the MARC record that the Library of Congress contributes to the OCLC bibliographic database. As can be seen in field 008 of Attachment 1C, a cataloger at the Library of Congress created OCLC record number 36001437 on November 21, 1996 (“961121”). The MARC record indicates that the Perry book was received and verified on August 25, 1997, as shown in field 955 (“8-25-97”). The library community continues to update and enhance this MARC record to meet current cataloging rules. The most recent enhancement to Attachment 1C occurred on February 10, 2024, as shown in field 005 (“20240210”). I personally identified and retrieved the MARC record that is Attachment 1C.

47. Attachment 1C further includes an entry in field 050 (“TP151 \$b .P45 1997”)—as described above, this includes a subject matter classification number consistent with the Library of Congress classification system (analogous to the Dewey Decimal classification system) and an entry in field 082 (“660”), a subject matter consistent with the Dewey Decimal classification system. Attachment 1C further includes a descriptor term reading “Chemical engineering \$v Handbooks, manuals, etc.” (see Attachment 1D, Library of Congress subject heading sh2009118796) in the 650 field. Thus, as of its cataloging, the publication corresponding to the MARC record attached hereto as Attachment 1C was indexed according to its subject matter by virtue of at least three independently sufficient

classifications: the field 050 entry, the field 082 entry, and the field 650 entry. Further, as of November 21, 1996, the MARC record attached hereto as Attachment 1C was accessible through any library with access to the OCLC bibliographic database or the online catalog at a library that added this book to its collection, which means that the corresponding publication was publicly available on or before that same date through any library with access to the OCLC bibliographic database or through an individual library.

48. Further supporting my opinion that Exhibit 1015 was publicly accessible to ordinarily skilled and interested researchers in the field is the fact that the book titled *Perry's Chemical Engineers' Handbook*, 7th edition, was registered with the U. S. Copyright Office as item TX0004635819 on September 16, 1997, and indicated a publication date of August 4, 1997 (see Attachment 1E, U. S. Copyright Office Public Catalog). As noted above, this would have provided a POSA with keyword searching capabilities and other tools to locate this book.

49. WorldCat indicates that the Perry book as cataloged at the Library of Congress is currently available from 2,198 libraries.¹⁹ In view of above, the book titled *Perry's Chemical Engineers' Handbook*, 7th edition, was publicly available on or shortly after August 25, 1997, because by that date it had been cataloged and

¹⁹ <https://search.worldcat.org/title/36001437>

indexed at the Library of Congress and made part of the OCLC bibliographic database. For these reasons, it is my opinion that Exhibit 1015 was published and accessible to the public on or shortly after August 25, 1997.

B. Document 2: Exhibit 1011 (“Kwade”)

50. Attached hereto as Exhibit 1011 is a book titled *LithoRec Recycling von Lithium-Ionen-Batterien; Abschlussbericht des Verbundprojektes* by Arno Kwade and Gunnar Bärwaldt (hereafter “Kwade”) and issued by Cuvillier in 2012. Exhibit 1011 is a true and correct copy of the title page, copyright page, table of contents, nine chapters, illustrations, and tables as held by the Deutsche Nationalbibliothek (Frankfurt, Germany). I obtained Exhibit 1011 from counsel. The text in Exhibit 1011 is complete; no pages are missing, and the text on each page appears to flow seamlessly from one page to the next; further, there are no visible alterations to the document. Exhibit 1011 is a true and correct copy in a condition that creates no suspicion about its authenticity.

51. Attached hereto as Attachment 2A is a true and correct copy of the metadata record for this monograph from the Deutsche Nationalbibliothek online catalog. Library ownership is indicated by the presence of the library’s name at the top of the screen. The library continues to update this MARC record and enhanced the MARC record to meet current cataloging rules. I personally identified and retrieved the library catalog record which is Attachment 2A.

52. The International Standard Book Number (ISBN) on Exhibit 1011 (978-3-85404-112-1) matches the ISBN field of Attachment 2A. Therefore, Exhibit 1001 is the same book as the one that the cataloger at the Deutsche Nationalbibliothek used to create the metadata record that is Attachment 2A.

53. Attached hereto as Attachment 2B is a true and correct copy of the MARC record for the book titled *LithoRec Recycling von Lithium-Ionen-Batterien; Abschlussbericht des Verbundprojektes* obtained from the OCLC bibliographic database. I personally identified and retrieved the MARC record that is Attachment 2B. As previously noted, the library that created the record is recorded in field 040 with a unique library code. For Attachment 2B, that library code is “GWDNB,” which means that the MARC record for this book was created at the Deutsche Nationalbibliothek. As can be seen in field 008 of Attachment 2B, a cataloger at the Deutsche Nationalbibliothek created OCLC record number 811260463 on June 20, 2012 (“120620”). The library community continues to update and enhance this MARC record to meet current cataloging rules. The most recent enhancement to Attachment 2B occurred on February 2, 2024, as shown in field 005 (“20240202”). I personally identified and retrieved the MARC record that is Attachment 2B.

54. Attachment 2B further includes an entry in field 082 (“621.3124240286”), a subject matter consistent with the Dewey Decimal classification system. Attachment 2B further includes four German language

descriptor terms reading “Lithium-Ionen-Akkumulator,” “Altbatterie,” “Elektrofahrzeug,” and “Recycling” in the 650 fields. Thus, as of its cataloging, the publication corresponding to the MARC record attached hereto as Attachment 2B was indexed according to its subject matter by virtue of at least two independently sufficient classifications: the field 082 entry and the field 650 entries. Further, as of June 20, 2012, the MARC record attached hereto as Attachment 2B was accessible through any library with access to the OCLC bibliographic database or the online catalog at a library that added this book to its collection, which means that the corresponding publication was publicly available on or before that same date through any library with access to the OCLC bibliographic database or through an individual library.

55. WorldCat indicates that the Kwade book as cataloged at the Deutsche Nationalbibliothek is currently available from 8 libraries.²⁰ In view of above, the book titled *LithoRec Recycling von Lithium-Ionen-Batterien; Abschlussbericht des Verbundprojektes* was publicly available on or shortly after June 20, 2012, because by that date it had been received, cataloged, and indexed at the Deutsche Nationalbibliothek and made part of the OCLC bibliographic database. For these

²⁰ <https://search.worldcat.org/title/811260463>

reasons, it is my opinion that Exhibit 1011 was published and accessible to the public on or shortly after June 20, 2012.

VII. SUMMARY OF OPINIONS

56. In view of the foregoing, it is my opinion that the publications described above were publicly available on or about the corresponding date listed in the table below:

Document	Publication	Publicly Available
Exhibit 1015	<i>Perry's Chemical Engineers' Handbook</i> . 7th ed. Edited by Don W. Green and James O. Maloney. New York: McGraw-Hill, c1984.	August 25, 1997
Exhibit 1011	Kwade, Arno, and Gunnar Bärwaldt. <i>LithoRec Recycling von Lithium-Ionen-Batterien ; Abschlussbericht des Verbundprojektes</i> . Göttingen, Germany: Cuvillier, 2012.	June 20, 2012

57. In signing this Declaration, I recognize that the Declaration will be filed as evidence in a case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

58. I hereby declare 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 Title 18 of the United States Code.

Dated: March 7, 2025

By: 

ATTACHMENT 1A

MARC Bibliographic Record

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001         9937566043602122

005         20180322222626.0

008         961121t19971997nyua      f      001 0 eng

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020         $a0070498415 (alk. paper)

035         $a(OCOLC)36001437

035         $9AVP9384UW

035         $a(WU)3756604-uwmadisondb

035         $a(EXLNZ-01UWI_NETWORK)999800771102121

040         $aDLC$beng$cDLC$dJED$dDAY$dGZM

049         $aGZMA

050         00      $aTP151$b.P45 1997

082         00      $a660$221

245         00      $aPerry's chemical engineers' handbook.

246         30      $aChemical engineers' handbook

250         $aSeventh edition /$bprepared by a staff of specialists under
the editorial direction of late editor Robert H. Perry ;
editor, Don W. Green ; associate editor, James O. Maloney.

```

264 1 \$aNew York :\$bMcGraw-Hill,\$c[1997]

264 4 \$c@1997

300 \$a1 volume (various pagings) :\$billustrations ;\$c26 cm

336 \$atext\$btxt\$2rdacontent

337 \$aunmediated\$bn\$2rdamedia

338 \$avolume\$bnc\$2rdacarrier

504 \$aIncludes bibliographical references and index.

650 0 \$aChemical engineering\$vHandbooks, manuals, etc.

700 1 \$aPerry, Robert H.,\$d1924-1978.

700 1 \$aGreen, Don W.

700 1 \$aMaloney, James O.

959 \$aON RESERVE

997 \$aMARCIVE

MMS IDs

Document ID:

999800771102121

Network Electronic IDs:

Network Physical IDs:

999800771102121

mms_mad_ids:

9937566043602122

mms_sf_ids:

995139883602130

ATTACHMENT 1B

LIBRARY

CATALOG

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<

7 of 7

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BOOK

Perry's chemical engineers' handbook

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000	01502cam a2200337 a 4500
001	693096
005	20080428095637.0
008	961121s1997 nyua bf 001 0 eng
906	— a 7 b cbc c orignew d 1 e ocip f 19 g y-gencatlg
955	— a pb16 to ja00 11-21-96; jd99 11-21-96; jd05 11-21-96; jd11 11-22-96; CIP ver. yb07 8-25-97
035	— 9 (DLC) 96051648
010	— a 96051648
020	— a 0070498415 (alk. paper)
040	— a DLC c DLC d DLC
050	00 a TP151 b .P45 1997
082	00 a 660 2 21
245	00 a Perry's chemical engineers' handbook.
250	— a 7th ed. / b prepared by a staff of specialists under the editorial direction of late editor Robert H. Perry ; editor, Don W. Green ; assistant editor, James O. Maloney.
260	— a New York : b McGraw-Hill, c c1997.
300	— a 1 v. (various pagings) : b ill. ; c 27 cm.
504	— a Includes bibliographical references and index.
650	_0 a Chemical engineering x Handbooks, manuals, etc.
700	1_ a Perry, Robert H., d 1924-1978.
700	1_ a Green, Don W.
700	1_ a Maloney, James O.

856	42	3 Publisher description u http://www.loc.gov/catdir/description/mh022/96051648.html
856	41	3 Table of contents u http://www.loc.gov/catdir/toc/mh022/96051648.html
856	42	3 Contributor biographical information u http://www.loc.gov/catdir/enhancements/fy0735/96051648-b.html
920	__	a ** LC HAS REQ'D # OF SHELF COPIES **
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991	__	b c-GenColl h TP151 i .P45 1997 t Copy 1 w BOOKS

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CALL NUMBER	TP151 .P45 1997 CABIN BRANCH Copy 1
Request in	Jefferson or Adams Building Reading Rooms - STORED OFFSITE
Status	Not Charged

CALL NUMBER	TP151 .P45 1997 CABIN BRANCH Copy 2
Request in	Jefferson or Adams Building Reading Rooms - STORED OFFSITE
Status	Not Charged

ATTACHMENT 1C

Bibliographic Record - OCLC Number: 36001437

LDR	Record Status	'c' - Corrected or revised
	Type of Record	'a' - Language material
	Bibliographic Level	'm' - Monograph/Item
	Type of Control	' ' - No specified type of control
	Encoding Level	' ' - Full level
	Descriptive Cataloging Form	'a' - AACR2
001	36001437	
005	20240210061653.1	
008	Date Entered on File	'961121'
	Type of Date/Publication Status	's' - Single date
	Date1/Beginning Date of Publication	'1997'
	Date2/Ending Date of Publication	' '
	Place of Publication, Production, or Execution Code	'nyu' - New York
	Illustrations	'a' -
	Target Audience	' ' - Unknown or unspecified
	Form of Item	' ' - None of the following
	Nature of Contents Code	'bf' -
	Government Publication	' ' - Not a government publication
	Conference Publication	'0' - Not a conference publication
	Festschrift	'0' - Not a festschrift
	Index	'1' - Index present
	Literary Form	'0' - Not fiction
	Biography	' ' - No biographical material
	Language Code	'eng' - English
	Modified Record	' ' - Record is not modified
	Cataloging Source Code	' ' - National bibliographic agency
010	96051648	
040	DLC \$b eng \$c DLC \$d UKM \$d UBA \$d LVB \$d BAKER \$d NLGGC \$d YDXC P \$d BTCTA \$d OCLCG \$d P4I \$d AGLGW \$d DEBBG \$d OCLCQ \$d ZWZ \$d O CLCQ \$d MYPMP \$d TULIB \$d UBF \$d OCLCO \$d OCLCF \$d BEDGE \$d OCLC Q \$d OCLCO \$d RB# \$d MCBBL \$d HEBIS \$d OCL \$d SNU \$d OCLCQ \$d CSJ \$ d OCLCO \$d OCLCQ \$d CCH \$d CPO \$d OCLCO \$d OCLCQ \$d BGU \$d OCLC O \$d AU@ \$d OCLCQ \$d OCLCO \$d DCHUA \$d OCLCO \$d OCLCA \$d UMK \$ d OCLCQ \$d OCLCO \$d WURST \$d OCLCO \$d OCLCA \$d OCLCQ \$d OCLCO \$	

d BUF **\$d** OCLCO **\$d** OKS **\$d** OCLCO **\$d** SAR **\$d** OCLCO **\$d** SINLB **\$d** IL4J6 **\$**
d UKWOH **\$d** JHE **\$d** BDX **\$d** OCLCO **\$d** OCLCQ **\$d** OCLCL **\$d** OCLCQ **\$d** OCL
 CL

015 GB9749742 **\$2** bnb
 015 GB9976009 **\$2** bnb
 016 7 007750704 **\$2** Uk
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 020 0071159827
 020 9780071159821
 020 0071355405 **\$q** (boxed set)
 020 9780071355407 **\$q** (boxed set)
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 082 0 0 660 **\$2** 21
 084 35.00 **\$2** bcl
 084 58.00 **\$2** bcl
 084 LQ 09 **\$2** blsrisc
 084 VN 7000 **\$2** rvk
 084 CIT 001b **\$2** stub

245 0 0 Perry's chemical engineers' handbook.
 250 7th ed. / **\$b** prepared by a staff of specialists under the editorial direction of late editor
 Robert H. Perry ; editor, Don W. Green ; assistant editor, James O. Maloney.
 260 New York : **\$b** McGraw-Hill, **\$c** ©1997.
 300 1 volume (various pagings) : **\$b** illustrations ; **\$c** 27 cm
 336 text **\$b** txt **\$2** rdacontent
 337 unmediated **\$b** n **\$2** rdamedia
 338 volume **\$b** nc **\$2** rdacarrier
 490 1 McGraw-Hill chemical engineering series
 504 Includes bibliographical references and index.
 505 0 Conversion factors and mathematical symbols / James O. Maloney -- Physical and che
 mical data / Peter E. Liley [and others] -- Mathematics / Bruce A. Finlayson [and other

- s] -- Thermodynamics / Hendrick C. Van Ness, Michael M. Abbott -- Heat and mass transfer / James G. Knudsen [and others] -- Fluid and particle dynamics / James N. Tilton -- Reaction kinetics / Stanley M. Walas -- Process control / Thomas F. Edgar [and others] -- Process economics / F.A. Holland, J.K. Wilkinson -- Transport and storage of fluids / Meherwan P. Boyce -- Heat-transfer equipment / Richard L. Shilling [and others].
- 505 0 Psychrometry, evaporative cooling, and solids drying / Charles G. Moyers, Glenn W. Baldwin -- Distillation / J.D. Seader, Jeffrey J. Sirola, Scott D. Barnicki -- Gas absorption and gas-liquid system design / James R. Fair [and others] -- Liquid-liquid extraction operations and equipment / Lanny A. Robbins, Roger W. Cusack -- Adsorption and ion exchange / M. Douglas LeVan, Giorgio Carta, Carmen M. Yon -- Gas-solid operations and equipment / Mel Pell, James B. Dunson -- Liquid-solid operations and equipment / Donald A. Dahlstrom [and others] -- Solid-solid operations and equipment / Kalanadh V.S. Sastry [and others] -- Size reduction and size enlargement / Richard L. Snow [and others] -- Handling of bulk solids and packaging of solids and liquids / Grantge J. Raymus.
- 505 0 Alternative separation processes / Joseph D. Henry, Jr. [and others] -- Chemical reactors / Stanley M. Walas -- Biochemical engineering / Henry R. Bungay -- Waste management / Louis Theodore [and others] -- Process safety / Stanley M. Englund [and others] -- Energy resources, conversion, and utilization / Walter F. Podolski [and others] -- Materials of construction / Oliver W. Siebert, John G. Stoecker -- Process machinery drives / Heinz P. Bloch [and others] -- Analysis of plant performance / Colin S. Howat.
- 530 Also available online. Access is limited to authorized users and institutions.
- 520 Reference work for chemical and process engineers. Newest developments, advances, achievements and methods in various fields.
- 650 0 Chemical engineering \$v Handbooks, manuals, etc.
- 650 2 Chemical Engineering
- 650 6 Génie chimique \$x Guides, manuels, etc.
- 650 6 Génie chimique \$v Guides, manuels, etc.
- 650 7 chemical engineering. \$2 aat
- 650 7 Génie chimique. \$2 eclas
- 650 7 Chemical engineering \$2 fast
- 650 7 Technische Chemie \$2 gnd
- 650 7 Chemische Verfahrenstechnik \$2 gnd
- 650 7 Physikalisch-chemische Eigenschaft \$2 gnd
- 650 7 Verfahrenstechnik \$2 gnd
- 650 1 7 Chemische technologie. \$2 gtt
- 650 1 7 Procestecnologie. \$2 gtt
- 650 7 Engenharia quimica. \$2 larpcal
- 650 7 Chemical engineering \$v Handbooks, manuals, etc. \$2 nli
- 650 7 Chimie industrielle \$x Ouvrages de référence. \$2 ram
- 650 7 Génie chimique \$x Guides, manuels, etc. \$2 ram

653 0 0 handboeken
 653 0 0 handbooks
 653 0 0 chemische proceskunde
 653 0 0 chemical engineering
 653 1 0 Food and Bioprocess Engineering (General)
 653 1 0 Levensmiddelen- en bioproceskunde (algemeen)
 655 2 Handbook
 655 7 handbooks. **\$2** aat
 655 7 Handbooks and manuals **\$2** fast
 655 7 Handbooks and manuals. **\$2** lcgft
 655 7 Guides et manuels. **\$2** rvmgf
 700 1 Perry, Robert H., **\$d** 1924-1978. **\$1** <https://id.oclc.org/worldcat/entity/E39PBJfmqqWQJypMMcfHq68Hmd>
 700 1 Green, Don W.
 700 1 Maloney, James O.
 758 **\$i** has work: **\$a** Perry's Chemical engineers' handbook (Text) **\$1** <https://id.oclc.org/worldcat/entity/E39PCGW8WkyctHGJPf7yC36yq3> **\$4** <https://id.oclc.org/worldcat/ontology/hasWork>
 776 0 8 **\$i** Online version: **\$t** Perry's chemical engineers' handbook. **\$b** 7th ed. **\$d** New York : McGraw-Hill, ©1997 **\$w** (OCoLC)899184786
 830 0 McGraw-Hill chemical engineering series.
 856 4 1 **\$3** Dawsonera **\$u** <http://www.dawsonera.com/depp/reader/protected/external/AbstractView/S9780071593137>
 856 4 1 **\$3** Knovel **\$u** <http://www.knovel.com/knovel2/Toc.jsp?BookID=48>
 856 4 1 **\$3** Table of contents **\$u** <http://catdir.loc.gov/catdir/toc/mh022/96051648.html>
 856 4 2 **\$3** Contributor biographical information **\$u** <http://catdir.loc.gov/catdir/enhancements/fy0735/96051648-b.html>
 856 4 2 **\$3** Publisher description **\$u** <http://catdir.loc.gov/catdir/description/mh022/96051648.html>

ATTACHMENT 1D

The Library of Congress

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MARC Display

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LC control no.: sh2009118796

LCCN Permalink: <https://lccn.loc.gov/sh2009118796>

HEADING: Chemical engineering Handbooks, manuals, etc.

000 00492cz a2200169n 450

001 7933459

005 20110729162246.0

008 090624|| anannbabn |n ana

010 __ |a sh2009118796

035 __ |a (DLC)430673

035 __ |a (DLC)sh2009118796

040 __ |a DLC |b eng |c DLC

150 __ |a Chemical engineering |v Handbooks, manuals, etc.

667 __ |a Record generated for validation purposes.

670 __ |a Work cat.: Perry's chemical engineers' handbook, c1997

906 __ |t 8888 |u tc00 |v 0

953 __ |a tc00

< Previous

Next >

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Library of Congress

URL: <https://www.loc.gov/>

Mailing Address:

101 Independence Ave,
S.E.
Washington, DC 20540

Library of Congress Authorities

URL: <http://authorities.loc.gov/>

Library of Congress Online Catalog

URL: <https://catalog.loc.gov/>Questions, comments, error reports: [Contact Us](#)

ATTACHMENT 1E

Try the [Copyright Public Records System \(CPRS\)](#) pilot with enhanced search features and filters.

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Public Catalog

Copyright Catalog (1978 to present) at DC4

Search Request: Left Anchored Title = Perry's Chemical Engineers' Handbook

Search Results: Displaying 4 of 5 entries

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Perry's chemical engineers' handbook / late editor, Robert H. Perry,...

Type of Work: Text

Registration Number / Date: TX0004635819 / 1997-09-16

Title: Perry's chemical engineers' handbook / late editor, Robert H. Perry, editor, Don W. Green, associate editor, James O. Maloney.

Edition: 7th ed.

Imprint: New York : McGraw-Hill, c1997.

Description: 1 v.

Copyright Claimant: McGraw-Hill Companies, Inc.

Date of Creation: 1997

Date of Publication: 1997-08-04

Previous Registration: Prev. reg. 1984, TX 1-462-715.

Basis of Claim: New Matter: additions and revisions.

Names: [Perry, Robert H.](#)

[Green, Don W.](#)

[Maloney, James O.](#)

[McGraw-Hill Companies, Inc.](#)



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Link zu diesem Datensatz	https://d-nb.info/1023536110
Titel	LithoRec : Recycling von Lithium-Ionen-Batterien ; Abschlussbericht des Verbundprojektes / [NFF, Niedersächsisches Forschungszentrum Fahrzeugtechnik ... Arno Kwade ...]
Person(en)	Kwade, Arno (Mitwirkender) Bärwaldt, Gunnar (Mitwirkender)
Organisation(en)	Niedersächsisches Forschungszentrum Fahrzeugtechnik (Herausgebendes Organ)
Ausgabe	1. Aufl.
Verlag	Göttingen : Cuvillier
Zeitliche Einordnung	Erscheinungsdatum: 2012
Umfang/Format	XV, 291 S. : Ill., graph. Darst. ; 30 cm
ISBN/Einband/Preis	978-3-9540411-2-1 kart. : EUR 89.00 (DE), EUR 91.50 (AT)
EAN	9783954041121
Sprache(n)	Deutsch (ger)
Schlagwörter	Lithium-Ionen-Akkumulator ; Altbatterie ; Elektrofahrzeug ; Recycling



DDC-Notation	621.3124240286 [DDC22ger]	
Sachgruppe(n)	621.3 Elektrotechnik, Elektronik	
Weiterführende Informationen	Inhaltsverzeichnis	

Frankfurt	Signatur: 2012 B 19604 Bereitstellung in Frankfurt
Leipzig	Signatur: 2012 B 24034 Bereitstellung in Leipzig



Andere Personen fanden auch interessant:



Entwicklung eines Recyclingverfahrens für portable Li-Ion-Gerätebatterien

Tim Georgi-Maschler

2011



Handbuch Lithium-Ionen-Batterien

Reiner Korthauer Hrsg.

2013



Handbuch Lithium-Ionen-Batterien

2013



Degradationsuntersuchungen von Lithium-Ionen Batterien bei deren Einsatz in Elektro- und Hybridfahrzeugen

vorgelegt von André Haubrock

2011



Recycling of Lithium-Ion Batteries

The LithoRec Way

2018



Strategische Planung des Recyclings von Lithium-Ionen-Batterien aus Elektrofahrzeugen in Deutschland

Claas Hoyer. Mit einem Geleitw. von Thomas S. Spengler

2015



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	Type of Control	' ' - No specified type of control
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	Descriptive Cataloging Form	'C' - ISBD punctuation omitted
001	811260463	
005	20240202180208.2	
008	Date Entered on File	'120620'
	Type of Date/Publication Status	'S' - Single date
	Date1/Beginning Date of Publication	'2012'
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	Place of Publication, Production, or Execution Code	'gw ' - Germany
	Illustrations	' '
	Target Audience	' ' - Unknown or unspecified
	Form of Item	' ' - None of the following
	Nature of Contents Code	' '
	Government Publication	' ' - Not a government publication
	Conference Publication	'0' - Not a conference publication
	Festschrift	'0' - Not a festschrift
	Index	'0' - No index
	Literary Form	'0' - Not fiction
	Biography	' ' - No biographical material
	Language Code	'ger' - German
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007	Category of Resource	't' - Text
	Specific Material Designation (t)	'u' - Unspecified
040	GWDNB \$b ger \$c GWDNB \$d DEBSZ \$d DEBBG \$d GWDNB \$d OCLCO \$d OC LCL	
015	12,A38 \$z 12,N26 \$2 dnb	
015	12,N26 \$2 dnb	

016 7 1023536110 \$2 DE-101
 020 9783954041121
 020 395404112X
 024 3 9783954041121
 044 \$c XA-DE-NI
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 083 7 621.3 \$q DE-101 \$2 22sdb
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 084 621.3 \$q DE-101 \$2 sdb
 085 \$8 1\u \$b 621.312424
 085 \$8 1\u \$z 1 \$s 0286

245 0 0 LithoRec \$b Recycling von Lithium-Ionen-Batterien ; Abschlussbericht des Verbundprojektes \$c [NFF, Niedersächsisches Forschungszentrum Fahrzeugtechnik ... Arno Kwade ...]
 246 3 Lith Rec
 246 3 Lith o Rec
 250 1. Aufl.
 264 1 Göttingen \$b Cuvillier \$c 2012
 300 XV, 291 S. \$b Ill., graph. Darst. \$c 30 cm
 336 Text \$b txt \$2 rdacontent/ger
 337 ohne Hilfsmittel zu benutzen \$b n \$2 rdamedia/ger
 338 Band \$b nc \$2 rdacarrier/ger
 650 7 Lithium-Ionen-Akkumulator \$2 gnd
 650 7 Altbatterie \$2 gnd
 650 7 Elektrofahrzeug \$2 gnd
 650 7 Recycling \$2 gnd
 653 (Produktform)Book
 653 (VLB-WN)1659: Hardcover, Softcover / Chemie/Sonstiges
 700 1 Kwade, Arno \$e Mitwirkender \$4 ctb
 700 1 Bärwaldt, Gunnar \$e Mitwirkender \$4 ctb
 710 2 Niedersächsisches Forschungszentrum Fahrzeugtechnik \$e Herausgebendes Organ \$4 isb
 758 LithoRec (Text) \$1 <https://id.oclc.org/worldcat/entity/E39PCGjFkqmrRDP4Qc9Q6vq43> \$4 <https://id.oclc.org/worldcat/ontology/hasWork>
 856 4 2 \$m B:DE-101 \$q application/pdf \$u <https://d-nb.info/1023536110/04> \$3 Inhaltsverzeichnis

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