1. Record Nr. UNINA9910964706903321

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Titolo	Chemistry of sustainable energy / / Nancy E. Carpenter
Pubbl/distr/stampa	Boca Raton : , : CRC Press, , [2014] ©2014
ISBN	1-04-005720-9 0-429-10192-9 1-4665-7533-6
Edizione	[1st ed.]
Descrizione fisica	1 online resource (424 p.)
Classificazione	NAT011000SCI013000TEC031010
Disciplina	577.14 577/.14
Soggetti	Green chemistry Environmental chemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Front Cover; Contents; Acknowledgments; Author; Introduction; Chapter 1: Energy Basics; Chapter 2: Fossil Fuels; Chapter 3: Thermodynamics; Chapter 4: Polymers and Sustainable Energy; Chapter 5: Catalysis and Hydrogen Production; Chapter 6: Fuel Cells; Chapter 7: Solar Photovoltaics; Chapter 8: Biomass; Chapter 9: Nuclear Energy; Chapter 10: Closing Remarks; Appendix I: SI Units and Prefixes; Appendix II: Unit Conversions; Appendix III: Electricity: Units and Equations; Appendix IV: Fossil Fuel Units and Abbreviations; Appendix V: Important Constants; Appendix VI: Acronyms; Back Cover
Sommario/riassunto	Meeting global energy demand in a sustainable fashion will require not only increased energy efficiency and new methods of using existing carbon-based fuels but also a daunting amount of new carbon-neutral energy. Nathan S. Lewis and Daniel G. Nocera Henry Dreyfus Professor of Energy at the Massachusetts Institute of Technology (Lewis and Nocera 2006) The image on the cover is that of the solar-powered airplane Solar Impulse high over Belgium in 2011. The goal of Solar Impulse is grand : to fly both night and day relying solely upon solar energy. More broadly, however, Solar Impulse is meant to inspire: it is an innovation that has risen to a technological challenge to

demonstrate that clean and sustainable energy can be achieved. It is an inspiration that is much needed when the impacts of global climate change are all around us. Based on the globally averaged temperature, 2012 was the tenth-warmest year since record-keeping began in 1880, and 2001-2012 rank among the 14 warmest years in this 133-year period. In the United States, 2012 was the warmest on record for the contiguous states and one of the most extreme with respect to temperature, precipitation, and tropical cyclones; 2013 promises to continue with respect to extreme weather events (National Oceanic and Atmospheric Administration 2012). Where is this climate change coming from? Overwhelming evidence points to the increasing amount of greenhouse gases--particularly carbon dioxide--in our atmosphere, a result of our insatiable consumption of fossil fuels (Bernstein and others 2008). While writing this text, the alarming milestone of 400 ppm atmospheric CO2 was surpassed--an ominous harbinger of climate change to come--