

1. Record Nr.	UNINA9910465416503321
Autore	Fahrner W. R (Wolfgang R.)
Titolo	Semiconductor thermoelectric generators // Wolfgang R. Fahrner and Stefan Schwertheim
Pubbl/distr/stampa	[Zurich] : , : Trans Tech Publications, , [2009]
ISBN	3-03813-321-3
Descrizione fisica	1 online resource (139 p.)
Collana	Materials science foundations ; ; volume 61
Disciplina	621.31243
Soggetti	Thermoelectric generators Semiconductors Electronic books.
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.
Nota di contenuto	Semiconductor Thermoelectric Generators; Preface; Contents; Table of Contents; 1 Introduction; 2 Historical Background; 2.1 The discovery of the thermoelectric effect by Thomas Johann Seebeck; 2.2 Historical development of the thermogenerator; 3 Basic Principles; 3.1 The Seebeck effect; 3.2 Characterization of thermoelectric generators; 4 Materials and Technology of Thermogenerators; 4.1 Thermogenerators as produced with thin film technology; 4.2 Thermogenerators as produced with thick film technology; 5 Measurement Techniques; 5.1 Measurement of the Seebeck coefficient 5.2 Measurement of the Thermal Conductivity 5.3 Four Point Measurement of the Electric Conductivity; 6 Cascadation and Segmentation; 6.1 Temperature Dependency of the Figure of Merit; 6.2 Segmented and cascaded thermogenerators; 7 New Concepts; 7.1 Nanomaterials; 7.2 Industrial concepts; 8 Condensed Literature Research; 8.1 Micro / nanothermogenerators; 8.2 Superlattice thin film thermogenerators; 8.3 Thermogenerator of layers deposited by electroplating; 9 Condensed Patent Research; 9.1 Thin film thermogenerators; 9.2 Thick film thermogenerators 10 Future Perspectives, Applications and Markets for Thermoelectrics 10.1 Future perspectives of thermoelectrics; 10.2 The patent situation of thermoelectrics; 10.3 Applications of Thermoelectrics; 10.4 Companies and markets for thermoelectrics; 11 Literature; 12

Acknowledgments; 13 List of Acronyms, Abbreviations and Symbols;  
Physical Symbols; Relevant Chemical Symbols

---

Sommario/riassunto

It is well-known that fossil fuels are being rapidly depleted, and that atomic power is rejected by many people. As a consequence, there is a strong trend towards alternative sources such as wind, photovoltaics, solar heat and biomass. Strangely enough, quite another power source is generally neglected: namely, the thermoelectric generator (a device which converts heat, i.e. thermal energy, directly into electrical energy). The reason for this neglect is probably the low conversion efficiency, which is of the order of a few percent at most. However, there are two arguments in favor of the

---