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Thermophotovoltaics Bibliography

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Thermophotovoltaics Bibliography

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Abstract - A bibliography containing 180 entries on thermophotovoltaic conversion of energy between 1950 and 1994 has been compiled. The entries are categorized with respect to type and contents.

Introduction

Thermophotovoltaic — or TPV— conversion is the conversion of thermal radiation to electricity by means of photovoltaic (PV) cells. The thermophotovoltaic process was first suggested by Aigrain in 1960 as a two-step process for conversion of heat into electricity. The first TPV converter was built by Werth in 1963 using germanium PV cells and a propane- fueled emitter at a temperature around 1700 K.

Since then, more than a hundred papers and reports have been published, most of them theoretical. The theoretical possibility of very high conversion efficiency has been calculated and pointed out in many papers. The optimism stemmed from the fact that crystalline silicon is transparent for photons with energies below the band-gap energy. Thus, if the back of the silicon TPV cell was coated with a highly IR-reflecting metal (e.g., silver), long-wavelength photons could be reflected back to the emitter. In 1980, Swanson reported a measured TPV conversion efficiency of 29% using silicon PVcells and a 2300 K graybody source.

Most of the work in the early 1980s envisioned TPV as a converter of radiation from an emitter, heated by concentrated sunlight, following the 1978 concept by Bracewell and Swanson. Many papers dealt with selective emitters or selectively reflecting filters as means to increase TPV conversion efficiency. Also other heat sources have, over the years, been discussed, such as radioactive sources for space or submarine applications. The need for very high temperatures in order to achieve good efficiency with a silicon cell-based TPV converter caused a declining interest in the process in the following years.

Presently, there is a strong renewed interest in TPV. This is due to two recent developments. One is the development of low-band-gap thin-film PV cells, originally developed for regular solar PV applications in tandem with high-band-gap cells; see Coutts and Lundstrom (1993). The other is the recent development of efficient selectively emitting fibrous emissive burners (Nelson 1992 and 1993). The first National Renewable Energy Laboratory (NREL) Conference on Thermophotovoltaic Generation of Electricity (24-27 July 1994 in Copper Mountain, Colorado) has attracted some 30 paper presentations, and the First World Conference on Photovoltaic Energy Conversion (5-9 December 1994 in Waikoloa, Hawaii) has TPV as a major topic.

This renewed interest in TPV makes this publication useful. Much research and development (R&D) work has been done during over three decades of TPV research, and researchers of the 1990s should be able to build their research on earlier results. While many papers have been published in scientific journals or presented at international conferences, a large number were published as institute reports or patent applications, or presented at national conferences.

The present bibliography has therefore been compiled using not only current data bases, but also by searching conference proceeding contents, studying reference lists in published papers, and using personal contacts. No bibliograhy can be complete, but the author hopes that no important

references have been missed. The reader may notice that a number of references do not specifically deal with TPV. They have been included because they contain R&D on components or processes that can be utilized in TPV conversion and because they have been refered to in articles on TPV. When the author has not been able to get hold of a reprint, the entry says so.

In order to assist the reader, the listed articles have been categorized using the scheme below. Such a categorization is sometimes subjective, as whether a paper is a review of R&D results or a research paper — many authors do not publish their calculations or experiments just once but many times, so when is a paper merely a review of previously published results? The entries are listed yearly, and alphabetically for each year.

The author would appreciate reader feedback. If someone knows of a reference that is missing, please send a copy of that paper or report. There is an ambition to keep up a TPV publications data base, and this should include not only this bibliography and new articles, but also older papers that are presently missing.

Acknowledgements

The good help in finding references for this bibliography by Al Burger, Mary Donahue, Kenneth Jarefors, Joergen Marks, Mats Roennelid, and Ted Wangensteen is highly appreciated. Lawrence L. Kazmerski is sincerely thanked for inviting me to NREL and being my host during my stay there.

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Categorization scheme

[1] General/Theory/Experiment **G T E**
Basic research/Applied R&D/Review/Patent/Magazine **B A R P M**
[2] Material/Components/System/Process **M C S P**
[3] Components Studied: PV-cell/Reflector/Filter/Emitter/Other **P R F E O**
[4] Process studied: Combustion/Other **C O**
[5] Energy source: Sun/Nuclear/Gas/Biomass/Fuel (other) **S N G B F**
[6] Application: Space/Electricity (terrestrial)/Cogeneration (terrestrial) **S E C**

TPV References

1950

M. D. Liston and J. U. White	[1]	[2]	[3]	[4]	[5]	[6]
Amplification and electrical systems for a double beam recording infra-red spectrophotometer J. Opt. Soc. Am. 40(1950)36-41	EB	C	P	-	-	-

1952

H. E. Kremers	[1]	[2]	[3]	[4]	[5]	[6]
Gas mantles Encyclopedia of Chemical Technology, Ed.s R. E. Kirk and D. F. Othmer The Interscience Encyclopedia, Inc., N Y, 1952, Vol. 8, pp 192-197	G	MC	E	-	-	-

1954

R. P. Ruth and J. W. Moyer	[1]	[2]	[3]	[4]	[5]	[6]
Power efficiency for the photovoltaic effect in a Ge grown junction Phys. Rev. 95(1954)562-564	EB	C	P	-	-	-

1955

W. C. Dash and R. Newman	[1]	[2]	[3]	[4]	[5]	[6]
Intrinsic optical absorption in single crystal germanium and silicon at 77K and 300K Phys. Rev. 99(4/15 Aug 1955)1151-1155	EB	M	-	-	-	-

1958

R. Braunstein, A. R. Moore, and F. Herman	[1]	[2]	[3]	[4]	[5]	[6]
Intrinsic optical absorption in GeSi alloys Phys. Rev. 109(3/1 Feb. 1958)695-710	EB	M	-	-	-	-

	[1]	[2]	[3]	[4]	[5]	[6]
B. M. Vul, V. S. Vavilov, L. S. Smirnov, G. N. Galkin, V. M. Packevic, and A. V. Spicyn Ueber die Umvandlung der Energie von b-Teilchen in Elektroenergie in Germaniumkristallen mit pn-Uebergaengen Kernenergie 1(4/1958)279-282	EB	C	PV	-	-	-

1959

	[1]	[2]	[3]	[4]	[5]	[6]
R. Bomal Detection des particules nucleaires avec les semi-conducteurs Bull. Info. Sci. Tech. (Paris) 34(1959)2-12	TEB	C	P	-	N	E

1960

	[1]	[2]	[3]	[4]	[5]	[6]
P. Aigrain The thermo-photovoltaic converter Unpublished lectures given at Department of Electrical Engineering, M. I. T. (1960/61)	(no reprint available)					

1961

	[1]	[2]	[3]	[4]	[5]	[6]
D. C. White, B. D. Wedlock, and J. Blair Recent advances in thermal energy conversion Proc. 15th Ann. Power Sources Conf. Atlantic City, NJ, May 1961, pp 125-132	GTBR	S	(P)	-	-	E

1963

	[1]	[2]	[3]	[4]	[5]	[6]
W. L. Eisenman, R. L. Bates, and J. D. Meriam Black radiation detector J. Opt. Soc. Am., 53(6/1963)729-734	EB	C	O	-	-	-
R. E. Henderson Artificially radiated energy for photo-voltaic power generation Proc. (3rd) PV Specialists Conf. (1963) Vol. II, pp A-5-1 - A-5-23	EA	(C)SP	(PEO)	C	(N)F	(S)E
A. Thelen Multilayer filters with wide transmittance bands J. Opt. Soc. Am. 53(1963)1266-1270	TB	C	F	-	-	-
B. D. Wedlock Thermal Photovoltaic Effect Proc. (3rd) PV Specialists Conf. (1963) Vol II, pp A-4-1 - A-4-13	GAR	(C)S	(PRE)	-	-	E
B. D. Wedlock Thermo-photo-voltaic conversion Proc. IEEE 51, 1963, pp 694-698	TEA	CS	P(F)	-	-	-

	[1]	[2]	[3]	[4]	[5]	[6]
J. Werth Operation of photovoltaic cells at high power densities Proc. (3rd) PV Specialists Conf. (1963) Vol II, pp A-6-1 - A-6-3 (The discussion of Henderson's, Wedlock's, and Werth's presentations on pp A-6-3 - A-6-7.)	EA	CS	PRFE	-	-	E
J. Werth Thermophotovoltaic energy conversion Proc. 17th Power Sources Conf. PSC Publications Committee, Red Bank, NJ, May 1963, pp 23-27	EBA	CS	PRE	C	G	E

1964

	[1]	[2]	[3]	[4]	[5]	[6]
A. Fortini, P. Bauduin, and P. Sibillot Realisation d'un convertisseur thermo-photovoltaique Revue Generale de l'Ectricite (Paris) 73(9/1964)466	GTA	S	-	-	-	-
J. Werth Design study of a thermophotovoltaic converter Proc. 18th Power Sources Conf. PSC Publications Committee, Red Bank, NJ May 1964, pp 153-158	EA	CSP	PREO	C	G	E
D. C. White and R. L. Schwartz P-I-N structures for controlled spectrum PV converters Combustion and Propulsion Sixth Agard Colloquium Energy Sources and Energy Conversion Ed.s H. M. DeGroff et. al. (1964) Gordon and Breach, N Y, pp 897-914	TB	C	P	-	-	-

1965

	[1]	[2]	[3]	[4]	[5]	[6]
D. G. Gritton and R. C. Bourke Radioisotope-photovoltaic energy conversion system Adv. Energy Conversion 5(1965)119-145	TA	CS	PFEO	-	N	E
B. D. Wedlock, A. Debs, R. Siegel, and G. Taylor Investigation of germanium diodes for thermo-photovoltaic energy convertors Rpt. DA44-009-AMC-625(T) from MIT, Cambridge, MA (1965), 84 pp	TEB	C	P	-	-	-

1966

P. Bauduin and P. Sibilliot
InAs diodes used for the thermophoto-voltaic conversion of energy
Adv. Energy Conversion 6(1966)67-70

[1]	[2]	[3]	[4]	[5]	[6]
TEB	C	P	-	-	-

D. P. Crouch and R. W. Beck
Study of germanium devices for use in a thermophotovoltaic converter
General Motors Corp. Progress Report No. 2, DA28-043-AMC-01420(E)
(March 1966)

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E. Kittl
Thermophotovoltaic energy conversion
Proc. 20th Power Sources Conf. (1966), pp 178-182
PSC Publ. Comm., Red Bank, NJ

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B. D. Wedlock and R. Siegel
Investigation of P-I-N germanium diodes for TPV conversion
Proc. 20th Power Sources Conf. (1966), p 182
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1967

R. W. Beck
Study of germanium devices for use in a thermophotovoltaic converter
General Motors Corp. Progress Report No. 2, DA28-043-AMC-02543(E)
(Feb. 1967)

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S. J. Shapiro
Thermophotovoltaic spectral analysis of a TPV system
Proc. 21st Power Sources Conf.
PSC Publ. Comm., Red Bank, NJ, 1967, pp 138-142

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EB	C	P	-	-	-

A. M. Vasilev
Thermophotovoltaic conversion efficiency
High Temperature 5(1967)316-322
(Teplofizika Vysokikh Temperatur)

[1]	[2]	[3]	[4]	[5]	[6]
TB	C	PF	-	(N)	(E)

A. M. Vasilev, T. M. Golovner, A. P. Landsman, and N. S. Lidorenko
Optical characteristics of silicon photocells and the efficiency of a thermophotoelectric converter
High Temperature 5(1967)967-973
(Teplofizika Vysokikh Temperatur)

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TEB	C(S)	PR	-	-	(E)

1968

G. Guazzoni, E. Kittl, and S. Shapiro
Status of TPV-energy conversion
Proc. Int. Electron Devices Meeting,
Washington, DC (Oct. 1968), p 128

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Rare earth radiators for thermophotovoltaic energy conversion
Proc. Int. Electron Devices Meeting,
Washington, DC (Oct. 1968), pp 130-132

[1]	[2]	[3]	[4]	[5]	[6]
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1969

C. W. Kim and R. J. Schwartz
A p-i-n thermo-photovoltaic diode
IEEE Trans. Electron Devices
16(1969)657-663

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TEB	C	P(F)	-	-	-

A.Thelen
Design of multilayer interference filters
Phys. Thin Films 5(1969)47

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GTR	C	F	-	-	-

G. E. Guazzoni
Rare-earth oxide radiators for thermo-photovoltaic energy conversion
Rpt. ECOM-3116 from US Army
Electronics Command, Fort Monmouth,
NJ (April 1969), 18 pp

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EB	M	(E)	-	-	-

1970

M. A. Kettani
Direct Energy Conversion
Addison-Wesley, 1970, pp 416-423

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GR	MCS	P(E)	-	-	E

1972

G. E. Guazzoni
High-temperature spectral emittance of oxides of erbium, samarium, neodymium and ytterbium
Appl. Spectrosc. 26(1972)60-65

[1]	[2]	[3]	[4]	[5]	[6]
EB	C	E	-	-	-

G. E. Guazzoni and E. Kittl
Experimental study of germanium cell performance with erbium oxide and silicon carbide radiators
Rpt. ECOM-3539 from US Army
Electronics Command, Fort Monmouth,
NJ (Feb. 1972), 27 pp

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EB	C	PE	-	-	(E)

E. Kittl and G. Guazzoni
Design analysis of TPV-generator system
Proc. 25th Power Sources Symp.,
May 1972, pp 106-109

[1]	[2]	[3]	[4]	[5]	[6]
TA	CS	PFEO	-	F	(E)

1973

	[1]	[2]	[3]	[4]	[5]	[6]
E. Kittl Unique correlations between blackbody radiation and optimum energy gap for a photovoltaic conversion device	TB	C	P	-	-	-
E. Kittl Energy conversion system US Patent 3,751,303 Filed 3 June 1971, issued 7 Aug. 1973	GP	C	PFEO	-	-	E

1974

	[1]	[2]	[3]	[4]	[5]	[6]
J. C. C. Fan, F. J. Bachner, G. H. Foley, and P. M. Zavracky Transparent heat-mirror films of TiO_2/Ag/$TiO_2$for solar energy collection and radiation insulation Appl. Phys. Lett. 25(12/1974)693-695	EB	C	F	-	-	-
G. E. Guazzoni and E. Kittl Cylindrical erbium oxide radiator structures for thermophotovoltaic generator Rpt. AD/A-001 525 from US Army Electronics Command; distr. by NTIS, US Dept. of Commerce (Aug. 1974), 27 pp	EA	MC	E	-	-	-

1975

	[1]	[2]	[3]	[4]	[5]	[6]
G. E. Guazzoni and E. Kittl Composite material structures for thermo-photovoltaic conversion radiator Rpt. ECOM-4351 from US Army Electronics Command, Fort Monmouth, NJ (Sept. 1975), 22 pp	EA	MC	E	-	-	-

1976

	[1]	[2]	[3]	[4]	[5]	[6]
J. R. Yeargan, R. G. Cook, and F. W. Sexton Thermophotovoltaic systems for electrical conversion Proc. 12th IEEE PV Specialists Conf. (1976), pp 807-813	TB	C	PR	-	-	(E)

1977

	[1]	[2]	[3]	[4]	[5]	[6]
W. E. Horne Solar thermal photovoltaic electric power generator Proc. Miami Int. Conf. on Alternative Energy Sources (1977), pp 793-795	TER	CS	R(PE)	-	S	E

1978

R. N. Bracewell and R. M. Swanson Silicon photovoltaic cells in TPV conversion Rpt ER-633, Electric Power Res. Inst. (February 1978), 84 pp	[1]	[2]	[3]	[4]	[5]	[6]
	TEBA	CS	PR	-	S	E

1979

R. L. Bell Concentration ratio and efficiency in thermophotovoltaics Solar Energy 23(1979)203-210	[1]	[2]	[3]	[4]	[5]	[6]
	TB	CS	PF	-	S	-

F. Demichelis and E. Minetti-Mezzetti A solar thermophotovoltaic converter Solar Cells 1(1979/80)395-403	[1]	[2]	[3]	[4]	[5]	[6]
	T(E)B	S	(F)	-	S	E

R. M. Swanson A proposed thermophotovoltaic solar energy conversion system Proc. IEEE 67, 1979, pp 446-447	[1]	[2]	[3]	[4]	[5]	[6]
	GR	S	-	-	S	E

R. M. Swanson Silicon photovoltaic cells in TPV conversion EPRI Interim Report ER-1272, Dec. 1979 123 pp	[1]	[2]	[3]	[4]	[5]	[6]
	TEA	C(S)	P(R)	-	S	E

1980

G. Castagno, F. Demichelis, and E. Minetti-Mezzetti Design method for multilayer interference filters Applied Optics 19(1980)386-388	[1]	[2]	[3]	[4]	[5]	[6]
	TB	C	F	-	-	-

F. Demichelis and E. Minetti-Mezzetti Miultibandgap cells in a thermophoto-voltaic system Proc. 3rd EC PV Solar Energy Conference (1980), pp 1006-1011	[1]	[2]	[3]	[4]	[5]	[6]
	TEA	CS	PF	-	S	E

M. W. Edenburn Analytical evaluation of a solar thermophotovoltaic (TPV) converter Solar Energy(1980)367-371	[1]	[2]	[3]	[4]	[5]	[6]
	TBA	CS	O	-	S	E

F. C. Holden Materials selection for the TPV radiator Report at an EPRI Meeting (1980), pp 6-19 - 6-27	[1]	[2]	[3]	[4]	[5]	[6]
	GR	MC	E	-	-	-

	[1]	[2]	[3]	[4]	[5]	[6]
W. E. Horne, A. C. Day, R. B. Greegor, L. D. Milliman, and W. L. Crabtree Solar thermophotovoltaic space power system Proc. 15th Intersociety Energy Conversion Engineering Conf. (IEEE), 1980, pp 377-382	TA	CS	O	-	S	S
W. D. Johnston, Jr. Solar Voltaic Cells 5.2.2 Indirect concentrators Marcel Dekker, Inc., 1980, pp 163-166	[1] GR	[2] -	[3] -	[4] -	[5] S	[6] (E)
S. Levy Thermophotovoltaic energy conversion for electric power generation Report at an EPRI Meeting (1980), pp 6-9 - 6-13	[1] GR	[2] CS	[3] EP	[4] -	[5] S(N)	[6] E
E. L. Paquette Thermophotovoltaic radiator program Report at an EPRI Meeting (1980), pp 6-29 - 6-31	[1] GR	[2] CS	[3] PE	[4] -	[5] S	[6] E
R. M. Swanson Assessment of thermophotovoltaic conversion using silicon photovoltaic cells Report at an EPRI Meeting (1980), pp 6-14 - 6-15	[1] GR	[2] C	[3] P	[4] -	[5] -	[6] -
R. M. Swanson Recent developments in thermophoto-voltaic conversion Proc. 3rd EC PV Solar Energy Conference (1980), p 1097	[1] GR	[2] C	[3] P	[4] -	[5] -	[6] -
R. M. Swanson Recent developments in thermo-photovoltaic conversion Proc. Int. Electron Devices Meeting, Washington, D. C., 8-10 Dec. 1980, pp 186-189	[1] EB	[2] C	[3] P(R)	[4] -	[5] -	[6] -
E. S. Vera, J. J. Loferski. M. Spitzer, and J. Schewchun Performance of ultra high efficiency thin germanium p-n junction solar cells intended for solar thermophotovoltaic application Proc. 3rd EC PV Solar Energy Conference (1980), pp 911-919	[1] TB	[2] C	[3] PR	[4] -	[5] (S)	[6] (E)
P. Würfel and W. Ruppel Upper limit of thermophotovoltaic solar-energy conversion IEEE Trans. Electron Devices 27(1980)745-750	[1] TB	[2] C	[3] FE	[4] -	[5] S	[6] E

1981

J. G. Severns and M. H. Cobble	[1]	[2]	[3]	[4]	[5]	[6]
A spacecraft thermophotovoltaic power source with thermal storage Proc. 16th Intersoc. Energy Conversion Engineering Conf. (1981), pp 89-94	TA	CS	PO	(O)	S	S
E. S. Vera, J. J. Loferski, and M. Spitzer	[1]	[2]	[3]	[4]	[5]	[6]
Theoretical limit efficiency of two junction tandem silicon-germanium solar cells intended for thermophotovoltaic application Proc. 15th IEEE PV Specialists Conference (1981), pp 877-882	TA	C	PR	-	(S)	(S)

1982

M. Agnello, G. Castagno, F. Demichelis, E. Minetti-Mezzetti, and E. Tresso	[1]	[2]	[3]	[4]	[5]	[6]
Research on the characteristic parameters of thermophotovoltaic (TPV) converter performance Il Nuovo Chimento 71B(1982)89-97	EB	S	-	-	S	E
F. Demichelis, G. Ferrari, E. Minetti-Mezzetti, and W. Perotto	[1]	[2]	[3]	[4]	[5]	[6]
Refining method for the design of multilayer stacks Applied Optics 21(10/1982)1854-1858	TB	C	F	-	-	-
F. Demichelis, E. Minetti-Mezzetti, M. Agnello, and V. Perotto	[1]	[2]	[3]	[4]	[5]	[6]
Bandpass filters for thermophotovoltaic conversion systems Solar Cells 5(1982)135-141	TB	C	F	-	-	-
F. Demichelis, E. Minetti-Mezzetti, M. Agnello, and E. Tresso	[1]	[2]	[3]	[4]	[5]	[6]
Evaluation of thermophotovoltaic efficiency J. Appl. Phys. 53(12/1982)9098-9104	TEB	S	-	-	S	-
M. A. Green	[1]	[2]	[3]	[4]	[5]	[6]
Solar Cells 11.6.3 Thermophotovoltaic conversion Prentice-Hall, Englewood Cliffs, NJ 07632 pp 217-219	GR	S	-	-	S	(E)
W. E. Horne	[1]	[2]	[3]	[4]	[5]	[6]
Conversion of solar to electrical energy U S Patent 4,313,024 Filed 5 April 1977, issued 26 Jan. 1982	P	CS	O	-	S	E
W. E. Horne, A. C. Day, and L. Crabtree	[1]	[2]	[3]	[4]	[5]	[6]
Improved thermophotovoltaic power system Proc. 17th IECEC, IEEE, 1982, pp 119-124	TA	CS	REO	-	S	-

E. S. Vera, J. J. Loferski, M. Spitzer, and J. Severns	[1]	[2]	[3]	[4]	[5]	[6]
Operating characteristics of thin thermo-photovoltaic cells with minority carrier mirrors and optical mirrors using selective radiators of erbium and ytterbium oxides Proc. 4th E. C. Photovoltaic Solar Energy Conference, 1982, pp 659-665	TB	CS	RE	-	S	-

1983

J. C. Bass, N. B. Elsner, and P. H. Miller	[1]	[2]	[3]	[4]	[5]	[6]
Nuclear thermophotovoltaics Proc. 18th Intersoc. Energy Conversion Engineering Conf., Vol. 5, pp 2189-2195 Am. Inst. of Ch. Engg., New York (1983)	GAR	S	-	-	N	S
F. Demichelis, L. Macera, E. Minetti-Mezzzetti, A. Tagliaferro, and E. Tresso	[1]	[2]	[3]	[4]	[5]	[6]
A new apparatus to evaluate thermophoto-voltaic conversion efficiency Proc. 5th EC PV Solar Energy Conference (1983), pp 221-224	EA	S	(F)	-	-	-
A. L. Fahrenbruch and R. H. Bube	[1]	[2]	[3]	[4]	[5]	[6]
Fundamentals of Solar Cells Academic Press, 1983, pp 526-530	GR	CS	P	-	S	E
H. Höfler, H. J. Paul, W. Ruppel, and P. Würfel	[1]	[2]	[3]	[4]	[5]	[6]
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Preliminary list of papers to be presented at the First NREL Conference on Thermophotovoltaic Generation of Electricity, 24-27 July 1994, Copper Mountain, Colorado
(papers not yet available for classification)

P. Adair and M. F. Rose
Composite emitters for TPV systems

R. K. Ahrenkiel, T. Wangensteen, M. M. Al-Jassim, M. Wanlass, and T. J. Coutts
Recombination lifetime of InxGal-xAs ternary alloys

P. Baldasero, E. Brown, B. Campbell, D. Depoy, and J. Parrington
Experimental assessment of low temperature voltaic energy conversion

I. Bhat, M. Ehsani, D. Morey, G. Nichols, J. Borrego, J. Parrington, and R. Gutmann
OMVPE growth and characterization of InGaAs for TPV conversion

J. Borrego and J. Parrington
Experimental assessment of low T1 photovoltaic energy conversion

J. Borrego, M. Zierak and G. Charache
Device modelling and parameter extraction for TPV cell development

L. Broman and J. Marks
Co-generation of electricity and heat from combustion of wood powder utilizing thermophotovoltaic conversion

D. R. Burger and R. L. Mueller
Characterization of thermophotovoltaic cells

C. Carter
The role of DOE's Division of Advanced Energy projects in thermophotovoltaics

D. L. Chubb, R. A. Lowe, and B. S. Good
Emitter theory for thin film selective emitter

K. Emery
Performance characterization of thermophotovoltaic cells

L. M. Fraas
Thermophotovoltaic electric generator using hydrocarbon burner

B. S. Good, D. L. Chubb, and R. A. Lowe
Temperature-dependent efficiency calculations for a thin-film selective emitter

P. E. Gruenbaum, M. S. Kuryla, and V. S. Sundaram
Technical and economic issues for gallium antimonide-based thermophotovoltaic systems

G. A. Holmquist
TPV development and the current ARPA underwater unmanned vehicle efforts

G. S. Horner, T. J. Coutts, and M. Wanlass
Proposal for a second generation lattice-matched multiple junction Ga2AsSb TPV converter

P. A. Iles
Photovoltaic principles used in thermophotovoltaic generators

R. K. Jain, D. M. Wilt, G. A. Landis, L. Weinberg, and D. J. Flood
Low bandgap solar cells for thermophotovoltaic applications

K. Krist
GRI Research on thermophotovoltaics

R. A. Lowe, D. L. Chubb, and B. S. Good
Radiative performance of Er and Ho-YAG selective emitters

J. B. Milstein, R. G. Roy and D. C. Mauer
Some characteristics of a novel direct thermal-to-optical energy converter medium

R. E. Nelson
Thermophotovoltaic emitter development

E. L. Ralph and M. FitzGerald
Systems/marketing challenges for TPV

D. L. Noreen and H. Du
Porous ceramic regenerative burner for use in lower temperature (<1500(C) TPV Systems

U. C. Pernisz and C. K. Saha
Silicon carbide emitter and burner elements for a TPV converter

R. Rosenfeld
An ARPA perspective on TPV

B. L. Sater
Vertical multi-junction cells for thermophotovoltaic conversion

A. Schock and V. Kumar
Radioisotope thermophotovoltaic system design and its application to an illustrative space mission

A. Schock, M. Mumunda, T. Or, and G. Summers
Analysis, optimization, and assessment of radioisotope thermophotovoltaic system design for an illustrative space mission

K. L. Schroeder, M. F. Rose, and J. E. Burkhalter
An experimental investigation of hybrid kerosene burner configurations for TPV applications

R. J. Schwartz and J. L. Gray
The design and modeling of photovoltaic cells for TPV systems

K. W. Stone, S. M. Kusek, and R. E. Drubka
Analysis of solar thermophotovoltaic test data from experiments performed at McDonnell Douglas

M. L. Timmons, P. R. Sharps, R. Venkatasubramanian, P. A. Iles, and C. L. Chu
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GaxIn1-xAs thermophotovoltaic converters

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InxGa1-xAs thermophotovoltaic cell performance vs. bandgap

Other Sources

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13. ABSTRACT *(Maximum 200 words)*

This is a bibliography containing 180 entries on thermophotovoltaic conversion of energy between 1950 and 1994. The entries are categorized with respect to type and contents.

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