

COMPENDEX (Ei Compendex)

- Subject Coverage**
- Civil and railroad engineering
 - Environmental and agricultural engineering
 - Geological and marine engineering
 - Mining and metallurgy
 - Chemical, petroleum, and fuel engineering
 - Bioengineering
 - Electrical engineering and electronics
 - Mechanical, automotive, and industrial engineering
 - Control devices and principles, instruments and measurement
 - Nuclear technology
 - Aerospace engineering
 - Heat and thermodynamics
 - Computers and data processing, communication engineering
 - Sounds and acoustical technology
 - Optics and optical devices
-

File Type Bibliographic

Features

Thesaurus		Controlled Term (/CT), Controlled Term in German (/CTDE)	
Alerts (SDIs)		Weekly	
CAS Registry Number [®] Identifiers	<input type="checkbox"/>	Page Images	<input type="checkbox"/>
Keep & Share	<input checked="" type="checkbox"/>	SLART	<input checked="" type="checkbox"/>
Learning Database	<input type="checkbox"/>	Structures	<input type="checkbox"/>

Record Content

- Bibliographic information, abstracts, and indexing
- Cited references from journals, books, conference contributions, reports, and other non-conventional literature

File Size More than 21.8 million records (09/20)

Coverage 1970-present

Updates Weekly

Language English

Database Producer

Elsevier (Engineering Information)
 360 Park Avenue South
 New York, NY 10010 USA
 Phone: 212-633-3895
 Fax: 212-633-3680
 Email: eicustomersupport@elsevier.com
 Copyright Holder

**Database
Supplier**

FIZ Karlsruhe
STN Europe
P.O. Box 2465
76012 Karlsruhe
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Fax: +49-7247-808-259
Email: helpdesk@fiz-karlsruhe.de

Sources

- Journals (over 5600)
 - Books
 - Reports
 - Conference contributions
 - Other non-conventional literature
-

User Aids

- Online Helps (HELP DIRECTORY lists all help messages available)
 - Ei Thesaurus – Classification Code
 - STNGUIDE
-

Clusters

- AEROTECH
- ALLBIB
- AUTHORS
- CHEMENG
- CHEMISTRY
- COMPUTER
- CONSTRUCTION
- CORPSOURCE
- ELECTRICAL
- ENGINEERING
- ENVIRONMENT
- FUELS
- GEOSCIENCE
- GOVREGS
- MATERIALS
- MEETINGS
- METALS
- NPS
- PETROLEUM
- POLYMERS

STN Database Cluster Information:

<http://www.stn-international.de/en/customersupport/customer-support#cluster+%7C+subjects+%7C+features>

Search and Display Field Codes

Fields that allow left truncation are indicated by an asterisk (*).

General Search Fields

Search Field Name	Search Code	Search Examples	Display Codes
Basic Index* (contains single words from title (TI), abstract (AB), classification code (text) (CC), controlled term (CT), and supplementary term (ST) fields)	None or /BI	S TURBOSHAFT ENGINE# S DIGITAL(2W)CONTROL S JET TURBINE# S FEEDBACK/BI,CT S ?LASER?	AB, CC, CT, ST, TI
Abstract* Accession Number Author (editor)	/AB /AN /AU	S ?SYMMETRI?/AB S 2008-4911759913/AN S CHENEY PAUL H/AU S CHENEY, PAUL H/AU S HERMAN, ?/AU	AB AN AU
Author Identifier (ORCID) (5) Classification Code (code and text) (1) Controlled Term	/AUID /CC /CT	S 0000-0003-4999-9161/AUID S (BRIDGES TUNNELS)/CC S 538.1/CC S MAN MACHINE SYSTEMS/CT S *MOTOR TRANSPORTATION/CT S (FAILURE ANALYSIS(S)AUTOMAT?)/CT S MAGNETIC RESONANCE+NT/CT	AUID CC CT
Controlled Term in German (2)	/CTDE	E AUSSENVERKLEIDUNG+ALL/CTDE S FACINGS/CTDE	CT
Controlled Word Country of Publication (ISO code and text) Corporate Source (author affiliations) (1) Document Type (STN code and text) E-mail Address (1) Entry Date (4) Field Availability International Standard (Document) Number (CODEN, ISBN, and ISSN) Journal Title (contains full and abbreviated journal titles) Language (ISO code and text) Meeting Date (4) Meeting Location Meeting Number Meeting Organizer (1) Meeting Title	/CW /CY /CS /DT (or /TC) /EML /ED /FA /ISN /JT /LA /MD /ML /MN /MO /MT	S MOTOR TRUCK TERMINALS/CW S US/CY S (IBM(S)LOS(W)GATOS)/CS S REPORT/DT S B/DT S AMERICAN EDU/EML S ED=20090109 S L10 AND AB/FA S MACYAC/ISN S 1212-4834/ISN S 9197040843/ISN S ACTA ASTRONAUTICA/JT S J ACOUST SOC AM /JT S FRENCH/LA S 900425-900427/MD S BRUSSELS/ML S 13230/MN S TECHNOLOGY GROUP/MO S (ELECTRONIC MANUFACTURING AND SYMPOSIUM)/MT	CT CY CS DT CS, EML ED FA ISN, SO JT, JTA, JTF, SO LA MD, SO ML, SO MN MO, SO MT, SO
Meeting Year (4) Number of Report	/MY /NR	S 1990/MY S AIAA 2005-818/NR	MD, SO NR

COMPENDEX**General Search Fields (cont'd)**

Search Field Name	Search Code	Search Examples	Display Codes
Publication Date (4) Publication Year (4) Publisher (1) Publisher Item Identifier Reference Count	/PD /PY /PB /PUI /REC (or /RE.CNT)	S JAN-FEB 2007/PD S L2 AND 1981-1983/PY S SPRINGER HEIDELBERG/PB S 1011092002203496/PUI S 8-10/REC	PD, SO PY, SO PB, SO PUI REC, SO
Source (contains CODEN, DOI, journal title and other higher level titles, ISBN, ISSN, publisher, meeting information, meeting organizers and sponsors, number of report)	/SO	S TRANSP SCI/SO S NATMA4/SO S 0499-9320/SO S 0-8031-0443-X/SO S (REMOTE SENSING (S) VEGETATION)/SO S 08030606016/SO S PSISDG/SO	SO
Summary Language (ISO code and text)	/SL	S GERMAN/SL S DE/SL	SL
Supplementary Term Title*	/ST /TI	S GADOLINIUM/ST S LONGWALL MINING/TI S (STOCKPILES(S)COKE OVEN)/TI S ?ALLOCATION?/TI	ST TI
Update Date (4) Word Count, Title	/UP /WC.T	S UP=20090127 S 10-20/WC.T	ED WC.T

- (1) Search with implied (S) proximity is available in this field.
(2) EXPAND with German terms may be used in the /CTDE thesaurus field to identify the corresponding English thesaurus terms. Only English terms are indexed and thus searchable in the database. This search can be carried out in the /CTDE field.
(3) Elements cited in Hill System order with an asterisk (*) between element terms.
(4) Numeric search field that may be searched using numeric operators or ranges.
(5) Field available for data entered or updated in the file since 2015.

Property Fields⁽¹⁾

In COMPENDEX a numeric search for a specific set of physical properties (/PHP) is available within the abstract and title fields. The numeric values are not displayed as single fields, but highlighted within the hit displays.

Use EXPAND/PHP to search for all available physical properties. A search with the respective field codes will be carried out in the abstract and title fields. The /PHP index contains a complete list of codes and related text for all physical properties available for numeric search.

Field Code	Property	Unit	Search Examples
/AOS	Amount of substance	Mol	S 10/AOS
/BIR	Bit Rate	Bit (Bit)	S 100000-160000/BIR
/BIT	Stored Information	Bit	S BIT > 3 MEGABIT (10A) STORAGE
/CAP	Capacitance	Farad	S 1-10 MF/CAP
/CDN	Current Density	Ampere/Square Meter	S CDN>5 A/M**2
/CMOL	Molarity (Concentration, amount of substance)	mol/l	S MOLYBD?/BI (S) 2/CMOL
/CON	Conductance	S (Siemens)	S 1E-2/CON
/DB	Decibel	Decibel	S DB>50
/DEG	Degree	Degree	S (POLARI? (S) ANGLE)/BI (S) 45/DEG
/DEN	Density (Mass Density)	Kg/m3	S (METHOD? (S) COMPO?)/AB (S) 5E-3-10E-3/DEN
/DEQ	Dose Equivalent	Sievert	S DEQ>0.5 (S) RADIATION
/DOS	Dosage	Milligram/Kilogram	S DOS>0.8
/DV	Viscosity, dynamic	Pa * s (Pascal * second)	S DV>5000

Property Fields⁽¹⁾ (cont'd)

Field Code	Property	Unit	Search Examples
/ECH	Electric Charge	Coulomb	S 15/ECH
/ECO	Electrical Conductivity	Siemens/Meter	S ECO>5000 (XA) GEOTHERMAL EFFECTS
/ELC	Electric Current	Ampere	S 1-10/ELC
/ELF	Electric Field	Volt/Meter	S 1-10/ELF
/ENE	Energy	J (Joule)	S NUTRIENTS AND 100/ENE
/ERE	Electrical Resistivity	Ohm * Meter	S ERE>10
/FOR	Force	N (Newton)	S 50 N/FOR
/FRE	Frequency	Hz (Hertz)	S ANALY?/AB (10A) 0-3/FRE
/IU	International Unit	none	S IU>100 (P) INTERFERON
/KV	Viscosity, kinematic	m ² /s	S LUBRICANT/BI (S) 10E-5/KV
/LEN (or /SIZ)	Length	Meter	S 1-4/LEN
/LUME	Luminous Emittance/Illuminance	Lux	S 10-50/LUME
/LUMF	Luminous Flux (Luminous Power)	Lumen	S FLUID (P) LUMF>3
/LUMI	Luminous Intensity	Candela	S 5<LUMI<15
/M	Mass	Kg (Kilogram)	S ALLOY/BI (30A) 1E-10-1E-5/M
/MFD (or /MFS)	Magnetic Flux Density	Tesla	S MFD>0E-3(S)MAGNETIC RESONANCE
/MFR (or /MFL)	Mass Flow Rate	Kilogram/Second	S MFR>1.2
/MM	Molar Mass	g/mol	S 2000-3000 G/MOL/MM
/MOLS	Molality of Substance	mol/kg	S 01.-10 mol/kg/MOLS
/PER	Percent (Proportionality)	Percent	S (TITAN? (3A) DIOXID?)/AB (S) 53/PER
/PHV	pH	pH	S 7.4-7.6/PHV
/POW	Power	W (Watt)	S (SOLAR? OR PHOTOVOLTAIC?)/BI (10A) 5-10/POW
/PRES (or /P)	Pressure	Pa (Pascal)	S (VACUUM (5A) DISTILL?)/BI (S) 1000-1100/PRES
/RAD	Radioactivity	Bq (Becquerel)	S RAD>100
/RES	Electrical Impedance/resistance	Ohm	S VOLTAGE/AB (P) 1-10/RES
/RSP	Rotational Speed	Revolution/Minute	S 5000-8000/RSP AND PARAFFIN
/SAR	Area /Surface Area	m ²	S (COATING? OR FOIL?)/BI (S) 10-100/SAR
/SOL	Solubility	Gram/100 gram	S SOL>20 (10W) WATER
/STSC	Surface Tension	J/m ²	S 60 J/M**2 /STSC
/TCO	Thermal Conductivity	K (Kelvin)	S 2-17/TCO (S) THERM?
/TEMP (or /T)	Temperature	K (Kelvin)	S (STABILITY (25A) VITAMIN?) (S) 10/TEMP
/TIM	Time	S (Second)	S CONDUCT?/AB (10W) 0-1/TIM
/VEL (or /V)	Velocity	m/s (Metre per Second)	S EVOL?/BI AND 2E-4-5E-4/VEL
/VELA	Velocity, angular	rpm	S VISCO?/AB (S) VELA<350
/VLR	Volumetric Flow Rate	Cubic Meter/Second	S 1-10/VLR (XA) VARIABILITY
/VOL	Volume	m ³	S ?EFFECT?/BI (15A) 1E-8-2E-8 /VOL
/VOLT	Voltage	V (Volt)	S APPLICATION/BI(10A) 5E-3<VOLT<7E-3

(1) Exponential format is recommended for the search of particularly high or low values, e.g. 1.8E+7 or 1.8E7 (for 18000000) or 9.2E-8 (for 0.00000092).

THESAURUS FIELDS

The Engineering Index Thesaurus is available online in fields /CT (Controlled Term) and /CTDE (Controlled Term in German) (Deutsch-Englische Ausgabe).

All Relationship Codes can be used with both the SEARCH and EXPAND command.

Code	Content	Examples
ALL	All Associated Terms (BT, SELF, DA, NOTE, USE, USE+, NEW, UF, UF+, OLD, NT, RT, CC)	E SATELLITES+ALL/CT E BESCHICHTUNGEN+ALL/CTDE S COATINGS+ALL/CTDE S FLARE STACKS+AUTO/CT
AUTO (1)	Automatic Relationship (SELF, USE, USE+, NEW, UF, UF+, OLD)	
BT	Broader Terms (BT, SELF)	E JUTE FASERN+BT/CTDE S JUTE FIBERS+BT/CTDE
HIE	Hierarchy (all Broader and Narrower Terms) (BT, SELF, NT)	E MAGNETIC DEVICES+HIE/CT
NOTE	Term with date and scope note (SELF, DA, NOTE)	E RAILS+NOTE/CT
NT	Narrower Terms (SELF, NT)	S RAILROAD TRACKS+NT/CT
RT	Related Terms (SELF, RT)	E SATELLITES+RT/CT
UF	Preferred and Forbidden Terms (SELF, UF, UF+, OLD)	E MAGNETIC DISK STORAGE+UF/CT
USE	Forbidden and Preferred Terms (SELF, USE, USE+, NEW)	S PARKWAYS+USE/CT

(1) Automatic Relationship is SET OFF. In case of SET REL ON, the result of EXPAND or SEARCH without any relationship code is the same as described for AUTO.

DISPLAY and PRINT Formats

Any combination of formats may be used to display or print answers. Multiple codes must be separated by spaces or commas, e.g., D L1 1-5 TI AU. The fields are displayed or printed in the order requested.

Hit-term highlighting is available for all fields. Highlighting must be ON during SEARCH to use the HIT, KWIC, and OCC formats.

Format	Content	Examples
AB AN AU AUID CC CS CT CY DT (TC) ED (UP) EML (1) ISN (1) JT (1) JTA (1) JTF (1) LA MD ML MN MO MT NR PD (1) PB (1) PUI PY (1) REC (RE.CNT) (1) SL SO ST TI UP WC.T (1)	Abstract Accession Number Author Author Identifier (ORCID) Classification Code Corporate Source (authors and affiliations) Controlled Term Country of Publication Document Type Entry Date E-mail Address International Standard (Document) Number Journal Title Journal Title, Abbreviated Journal Title, Full Language Meeting Date Meeting Location Meeting Number Meeting Organizer Meeting Title Number of Report Publication Date Publisher Publisher Item Identifier Publication Year Reference Count Summary Language Source Supplementary Term Title Update Date Word Count, Title	D TI AB D 1-5 AN D AU TI D AUID D CC CT D CS D CT CC D CY D DT D ED D EML D ISN D JT D JTA D JTF D LA D MD D ML D MN D MO D MT D NR D PD D PB D PUI D PY D REC D SL D SO D CT ST 5-15 D TI 1-10 D UP D WC.T
ABS ALL DALL IALL ALLO BIB IBIB IND MAX SCAN (2) TRIAL (TRI, SAMPLE, SAM, FREE)	AN, AB BIB, AB, CC, CT, ST ALL, delimited for post-processing ALL, indented with text labels AN, TI, AU, MT, MO, ML, MD, SO, PY, MN, DT, LA, AB, CC, CT, ST, AN, TI, AU, CS, NR, SO, PUI, CY, DT, LA, SL, ED (BIB is default) BIB, indented with text labels AN, CC, CT, ST ALL, including AUID TI, CT (random display without answer numbers) TI, CC, CT, ST	D ABS D 1-3 ALL D DALL D IALL D BIB D IBIB D IND D MAX D SCAN D TRI
HIT KWIC OCC	Hit term(s) and field(s) Up to 50 words before and after hit term(s) (KeyWord-In-Context) Number of occurrences of hit term(s) and field(s) in which they occur	D HIT D KWIC D OCC

(1) Custom display only.

(2) SCAN must be specified on the command line, i.e., D SCAN or DISPLAY SCAN.

COMPENDEX**SELECT, ANALYZE, and SORT Fields**

The SELECT command is used to create E-numbers containing terms taken from the specified field in an answer set.

The ANALYZE command is used to create an L-number containing terms taken from the specified field in an answer set.

The SORT command is used to rearrange the search results in either alphabetic or numeric order of the specified field(s).

Field Name	Field Code	ANALYZE/ SELECT (1)	SORT
Abstract	AB	Y	N
Accession Number	AN	Y	N
Author	AU	Y	Y
Author Identifier	AUID	Y	Y
Citation	CIT (RE)	Y (2)	N
Classification Code	CC	Y	Y
CODEN	CODEN	N	Y
Controlled Term	CT	Y	N
Corporate Source (author affiliations)	CS	Y (3)	Y
Country of Publication	CY	Y	Y
Document Type	DT (TC)	Y	Y
E-mail Address	EML	Y	Y
Entry Date	ED (UP)	Y	Y
International Standard Book Number	ISBN	N	Y
International Standard (Document) Number	ISN	Y (4)	Y
International Standard Serial Number	ISSN	N	Y
Journal Title	JT	Y	Y
Journal Title, Abbreviated	JTA	Y	Y
Journal Title, Full	JTF	Y	Y
Language	LA	Y	Y
Meeting Date	MD	Y	Y
Meeting Location	ML	Y	Y
Meeting Number	MN	Y	Y
Meeting Organizer	MO	Y	Y
Meeting Title	MT	Y	Y
Number of Report	NR	Y	Y
Occurrence Count of Hit Terms	OCC	N	Y
Publication Date	PD	Y (3)	Y
Publisher	PB	Y	Y
Publisher Item Identifier	PUI	Y	Y
Publication Year	PY	Y (3)	Y
Reference Count	REC (RE.CNT)	Y	Y
Source	SO	Y (5)	N
Summary Language	SL	Y	Y
Supplementary Term	ST	Y	N
Title	TI	Y (default)	Y
Update Date	UP	Y	Y
Word Count, Title	WC.T	Y	Y

- (1) HIT may be used to restrict terms extracted to terms that match the search expression used to create the answer set, e.g., SEL HIT TI.
- (2) SELECT CIT or ANALYZE CIT allows you to extract the reference from the source documents in this database and have them automatically converted to a citation format for searching in SCISEARCH. SEL CIT selects first author, publication year, volume, first page, and a truncation symbol with /RE appended to the terms created by SELECT.
- (3) SELECT HIT and ANALYZE HIT are not valid with this field.
- (4) Selects or analyzes CODEN, ISBN, and ISSN with /ISN appended to the terms created by SELECT.
- (5) Selects or analyzes CODEN, ISBN, and ISSN with /SO appended to the terms created by SELECT.

Sample Records

DISPLAY BIB OF CONFERENCE

AN 2008-4911759913

TI A new approach to control a population of mobile robots using genetic programming

AU Luiz Anderson; Perez Fernandes; Bittencourt Guilherme; Roisenberg Mauro

CS Luiz Anderson; Perez Fernandes; Bittencourt Guilherme (Department of Automation and Systems, Federal University of Santa Catarina, UFSC, Florianopolis, SC (BR)); Roisenberg Mauro (Department of Computer Science, Federal University of Santa Catarina, UFSC, Florianopolis, SC (BR))

SO EMAIL: anderson@das.ufsc.br; gb@das.ufsc.br; mauro@inf.ufsc.br
 Proceedings of the 23rd Annual ACM Symposium on Applied Computing, SAC'08. Proceedings of the ACM Symposium on Applied Computing (2008), pp. 1602-1606, 16 refs.
 ISBN: 9781595937537
 DOI: 10.1145/1363686.1364063
 Published by: Association for Computing Machinery, 1515 Broadway, 17th Floor, New York, NY 10036-5701 (US)
 Conference: 23rd Annual ACM Symposium on Applied Computing, SAC'08 Fortaleza, Ceara (BR), 16 Mar 2008-20 Mar 2008
 Organizer(s): ACM Special Interest Group on Applied Computing (ACM SIGAPP)

CY United States

DT Conference; (Conference Paper)

LA English

SL English

ED Entered STN: 9 Jan 2009
 Last updated on STN: 15 Jan 2009

COMPENDEX

DISPLAY ALL OF JOURNAL

AN 2013-0315913005

TI Regeneration of the East African timber tree *Ocotea usambarensis* in relation to historical logging

AU Kleinschroth Fritz(1); Kowarik Ingo(1); Cierjacks Arne(1); Schoning Caspar(2); Kung'u James B.(3)
Correspondence(s): Kleinschroth F.(1)

CS (1)Department of Ecology, Ecosystem Science/Plant Ecology, Technische Universität Berlin, Rothenburgstr. 12, 12165 Berlin, Germany
(2)Functional Biodiversity, Dahlem Centre of Plant Sciences, Institut für Biologie, Freie Universität Berlin, Königin-Luise-Str. 1-3, 14195 Berlin, Germany
(3)Department of Environmental Sciences, Kenyatta University, P.O. Box 43844, 00100 Nairobi, Kenya
EMAIL: fritz.kln@gmail.com

SO Forest Ecology and Management (1 Mar 2013), Volume 291, pp. 396-403, 55 refs.
CODEN: FECMDW ISSN: 0378-1127
DOI: 10.1016/j.foreco.2012.11.021
Published by: Elsevier, P.O. Box 211, 1000 AE, Amsterdam, Netherlands

PUI S0378112712006974

CY Netherlands

DT Journal; Article

LA English

SL English

ED Entered STN: 21 Jan 2013
Last updated on STN: 21 Jan 2013

AB East African montane forests have been subjected to heavy logging, particularly of *Ocotea usambarensis* Engl., formerly one of the dominant tree species of moist mid-altitude forests. At Mt. Kenya, logging was suspended in 2000 after a conspicuous decline in population size, but the success of this conservation measure has not yet been evaluated. Given that a management scheme of *O. usambarensis* forests based on vegetative regeneration has been suggested, we hypothesized that natural regeneration mainly by root suckers would be sufficient for a recovery of this species. Demography and regeneration (both sexual and vegetative) of *O. usambarensis* were studied in 45 study plots between 1700 and 2500m asl along a gradient of historical logging intensity, while taking altitude and light incidence into account as predictor variables. The diameter distribution showed a high percentage of old individuals and rather low recruitment in *O. usambarensis*. In heavily logged areas (removed basal area >25m²ha⁻¹), smaller trees (<50cm DBH, >130cm high) were completely absent. The number of seedlings was low and independent of logging intensity. It increased with higher light incidence. The number of root suckers was 5.6-fold the number of seedlings, underscoring the importance of vegetative reproduction. However, number of root suckers and logging intensity were negatively correlated. We conclude that regeneration of *O. usambarensis* at Mt. Kenya is generally low and negatively influenced by historical logging. Therefore, natural regeneration is inadequate for the recovery of this valuable timber species, and additional conservation measures such as enrichment planting should be considered. .COPYRGT. 2012 Elsevier B.V.

CC 415.3 Wood Structural Materials; 442.2 Land Reclamation; 454 Environmental Engineering; 811.2 Wood and Wood Products; 922.2 Mathematical Statistics

CT *Reforestation; Conservation; Logging (forestry); Population statistics; Timber

ST Mount Kenya; Mountain forests; Regeneration; Root sucker; Seedling

DISPLAY MAX

AN 2020-0508105270 COMPENDEX

TI Exploring Disordered Morphologies of Blends and Block Copolymers for Light-Emitting Diodes with Mesoscopic Simulations

AU Zhang Jianrui(1); Kremer Kurt(1); Michels Jasper J.(1); Daoulas Kostas Ch.(1)
Correspondence(s): Michels Jasper J.(1)

AUID ORCID: <https://orcid.org/0000-0003-0666-0811> (Zhang Jianrui)
ORCID: <https://orcid.org/0000-0003-1842-9369> (Kremer Kurt)
ORCID: <https://orcid.org/0000-0003-1591-4449> (Michels Jasper J.)
ORCID: <https://orcid.org/0000-0001-9278-6036> (Daoulas Kostas Ch.)

CS (1)Max Planck Institute for Polymer Research, Ackermannweg 10, Mainz, Germany, 55128
EMAIL: michels@mpip-mainz.mpg.de; daoulas@mpip-mainz.mpg.de

SO Macromolecules (2020), 117 refs.
ISSN: 0024-9297 E-ISSN: 1520-5835
DOI: 10.1021/acs.macromol.9b02402
Published by: American Chemical Society
URL (Document): <http://pubs.acs.org/journal/mamobx>

CY United States

DT Journal; Article

LA English

SL English

ED Entered STN: 3 Feb 2020
Last updated on STN: 3 Feb 2020

AB Recently, disordered blends of semiconducting and insulating polymers have been used to prepare light-emitting diodes with increased luminous efficiency. Because the thermodynamic stability of the disordered phase in blends is limited, equivalent diblock copolymers (BCPs) could be an alternative. However, the choice between disordered blends and BCPs requires understanding structural differences and their effect on charge carrier transport. Using a hybrid mesoscopic model, we simulate blends and equivalent BCPs of two representative semiconducting and insulating polymers: poly(p-phenylene vinylene) (PPV) and polyacrylate. The immiscibility is varied to mimic annealing at different temperatures. We find stable or metastable disordered morphologies until we reach the mean-field (MF) spinodal. Disordered morphologies are heterogeneous because of thermal fluctuations and local segregation. Near the MF spinodal, segregation is stronger in BCPs than in the blends, even though the immiscibility, normalized by the MF spinodal, is the same. We link the spatial distribution of PPV with electric conductance. We predict that the immiscibility (temperature at which the layer is annealed) affects electrical percolation much stronger in BCPs than in blends. Differences in the local structure and percolation between blends and BCPs are enhanced at a high insulator content.

CC 413 Insulating Materials; 641.1 Thermodynamics; 701.1 Electricity, Basic Concepts and Phenomena; 708.3 Superconducting Materials; 712.1 Semiconducting Materials; 714.2 Semiconductor Devices and Integrated Circuits; 803 Chemical Agents and Basic Industrial Chemicals; 815.1 Polymeric Materials

CT *Light emitting diodes; Block copolymers; Carrier transport; Insulating materials; Semiconducting polymers; Solvents; Superconducting materials; Thermodynamic stability

ST Electrical percolation; Insulating polymer; Luminous efficiency; Mesoscopic modeling; Mesoscopic simulation; Poly-p-phenylenevinylene; Structural differences; Thermal fluctuations

=> E RAILROAD TRACKS+ALL/CT

E1 1261 BT2 Facilities/CT
E2 6379 BT2 Railroads/CT

COMPENDEX

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E3      3341    BT1  Railroad plant and structures/CT
E4      3439    --> Railroad tracks/CT
          DA    January 1993
E5       0      UF    Tracks (railroad)/CT
E6      301     OLD  Railroad plant and structures:Track/CT
E7       38     OLD  Railroad plant and structures:Track inspection/CT
E8      102     NT1  Railroad ties/CT
E9       66     NT1  Railroad track switches/CT
E10     348     RT   Ballast (railroad track)/CT
E11     270     RT   Rail laying/CT
E12     3691    RT   Rails/CT
E13     55      RT   Track test cars/CT
E14     0       CC   681.1/CT
***** END *****

```

=> E AUSSENVERKLEIDUNG+ALL/CTDE

```

E1      4939    BT3  EN Structures (built objects)/CTDE
E2       0      DE  Bauwerke (erbaute Objekte)/CTDE
E3     30967    BT2  EN Buildings/CTDE
E4       0      DE  Gebaeude/CTDE
E5      422     BT1  EN Building components/CTDE
E6       0      DE  Gebaedeteile/CTDE
E7      212     EN  Facings/CTDE
E8       0      --> DE  Aussenverkleidung/CTDE
          DA    EN  January 1993
          DE    Januar 1993
E9       63     OLD  EN Buildings:Facings/CTDE
E10     603     RT   EN Facades/CTDE
E11     0      DE  Fassaden/CTDE
E12     142     RT   EN Revetments/CTDE
E13     0      DE  Verkleidungen/CTDE
E14     401     RT   EN Veneers/CTDE
E15     0      DE  Furniere/CTDE
E16     0      CC   EN 402/CTDE
E17     0      CC   EN 408.2/CTDE
***** END *****

```

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