

Appendix A. ACRONYMS AND ABBREVIATIONS

ACEM	aberration-corrected electron microscope
ADF	annular dark-field
AMCL	Advanced Materials Characterization Laboratory
ANL	Argonne National Laboratory
ASM	American Society for Metals
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
Ba	barium
BET	Brunauer-Emmett-Teller theory
BMO	base metal oxides
CC	current collector
CCVD	combustion chemical vapor deposition
CDF	cumulative distribution function
CERT	Committee on Energy Research and Technology
CVD	chemical vapor deposition
CF8C	an Fe-19Cr-12NiCNb austenitic stainless steel
CN-12	an Fe-25Cr-13NiCNNb austenitic stainless steel
CRADA	cooperative research and development agreement
CRT	continuously regenerating technology
CWRU	Case Western Reserve University
DDC	Detroit Diesel Corporation
DOE	U.S. Department of Energy
DPF	diesel particulate filter
DRIFT	diffuse reflectance infrared Fourier transform spectroscopy
DSC	dispersion-strengthened composite
DTA	differential thermal analyzer
EDM	electro-discharge machining
EDS	energy dispersive spectroscopy
EERE	Office of Energy Efficiency and Renewable Energy
EGR	engine gas recirculation
EPA	U.S. Environmental Protection Agency
EPMA	electron probe microanalysis
EVD	electrochemical vapor deposition
FCVT	FreedomCAR and Vehicle Technologies
FTIR	Fourier transform infrared spectroscopy
HC	hydrocarbons
HDI	high-density infrared
HIP	hot isostatic pressing
HS	high stress
HSWR	High-Strength Weight-Reduction Materials Program

HTML	High Temperature Materials Laboratory
HVOF	high velocity oxygen-fueled
IA	implementing agreement
IA-AMT	Implementing Agreement for a Programme of Research and Development on Advanced Materials for Transportation Applications.
IEA	International Energy Agency
INEEL	Idaho National Engineering and Environmental Laboratory
ISO	International Organization for Standards
LANL	Los Alamos National Laboratory
LBNL	Lawrence Berkeley National Laboratory
LS	low stress
LSCF	$\text{La}_{0.6}\text{Sr}_{0.4}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_3$
LST	laser surface texturing
NASA	National Aeronautics and Space Administration
NDE	nondestructive evaluation
NiAl	nickel aluminide
NiCr	nickel chromium
NiCrFe	nickel chromium iron
NIST	National Institute of Standards and Technology
NO _x	oxides of nitrogen
NO _x	oxides of nitrogen; nitrites/nitrates species
NSF	National Science Foundation
NTRC	National Transportation Research Center
OFCVT	Office of FreedomCAR and Vehicle Technologies
ORNL	Oak Ridge National Laboratory
PM	particulate matter
PM	parts per million
PNNL	Pacific Northwest National Laboratory
PoT	pin-on-twin oscillating wear test
Pt	platinum
PZT	lead zirconate titanate
RE	reference electrode
SaCM	scanning acoustic microscopy
SAXS	small angle x-ray scattering
SCG	slow crack growth
SCR	selective catalytic reduction
SE	sensing electrode
SEM	scanning electron microscopy
SiC	silicon carbide
SIUC	Southern Illinois University–Carbondale
SOFC	solid oxide fuel cell

SO _x	oxy-sulfur species
SpaciMS	spacially resolved mass Spectrometer
SRBSN	sintered reaction-bonded silicon nitride
SRM	Standard Reference Material
SS	stainless steel
STEM	scanning transmission electron microscopy
TBCs	thermal barrier coatings
TEM	transmission electron microscopy
TFS	thru focal series
TGA	thermal gravimetric analysis (or analyzer)
Ti	titanium
TiAl	titanium aluminide
TiC	titanium carbide
TTBCs	thick thermal barrier coatings
TTZ	transformation-toughened zirconia
TWC	three-way catalyst
WC	tungsten carbide
XPS	X-ray photoelectron spectroscopy
XRD	X-ray diffraction
YSZ	yttria-stabilized zirconia