E V Kustova

List of Publications by Year
in descending order

160	2,202	185998 28	264894 42
papers	citations	h-index	g-index

163	163	163	441
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Kinetic and Continuum Modeling of High-Temperature Air Relaxation. Journal of Thermophysics and Heat Transfer, 2022, 36, 870-893.	0.9	14
2	Editorial: Thermal and Non-Thermal Plasmas at Atmospheric Pressure. Frontiers in Physics, 2022, 10, .	1.0	4
3	Hybrid approach to accurate modeling of coupled vibrational-chemical kinetics in carbon dioxide. Physics of Fluids, 2022, 34, .	1.6	10
4	Assessment of Machine Learning Methods for State-to-State Approach in Nonequilibrium Flow Simulations. Mathematics, 2022, 10, 928.	1.1	4
5	State-specific boundary conditions for nonequilibrium gas flows in slip regime. Physical Review E, 2022, 105, 034126.	0.8	6
6	Kinetic and Continuum Modeling of High-Temperature Oxygen and Nitrogen Binary Mixtures. Journal of Thermophysics and Heat Transfer, 2022, 36, 399-418.	0.9	11
7	Boundary Conditions for Fluid-Dynamic Parameters of a Single-Component Gas Flow with Vibrational Deactivation on a Solid Wall. Vestnik St Petersburg University: Mathematics, 2022, 55, 249-256.	0.1	2
8	Four-temperature kinetic model for CO2 vibrational relaxation. Physics of Fluids, 2021, 33, .	1.6	16
9	Novel approach for evaluation of CO2 vibrational relaxation times. Chemical Physics Letters, 2021, 764, 138288.	1.2	6
10	Generalized model for state-resolved chemical reaction rate coefficients in high-temperature air. Journal of Physics: Conference Series, 2021, 1959, 012033.	0.3	3
11	Investigation of shock wave structure in CO₂based on the continuum and DSMC approaches. Journal of Physics: Conference Series, 2021, 1959, 012032.	0.3	4
12	Simulations of CO2 multi-temperature vibrational kinetics on the basis of new relaxation time models. Journal of Physics: Conference Series, 2021, 1959, 012030.	0.3	1
13	State-to-state modeling of oxygen relaxation taking into account electron kinetics. Journal of Physics: Conference Series, 2021, 1959, 012034.	0.3	0
14	PAINeT: Implementation of neural networks for transport coefficients calculation. Journal of Physics: Conference Series, 2021, 1959, 012024.	0.3	3
15	Extended continuum models for shock waves in CO2. Physics of Fluids, 2021, 33, .	1.6	7
16	Advances in non-equilibrium $$hbox {CO}_2$$ plasma kinetics: a theoretical and experimental review. European Physical Journal D, 2021, 75, 1.	0.6	47
17	Calculation of vibrational relaxation times in carbon dioxide using forced harmonic oscillator model. AIP Conference Proceedings, 2021, , .	0.3	0
18	Dynamics of plasma formation and gas heating in a focused-microwave discharge in nitrogen. Journal of Applied Physics, 2021, 129, .	1.1	12

#	Article	IF	Citations
19	Multi-temperature vibrational energy relaxation rates in CO2. Physics of Fluids, 2020, 32, .	1.6	22
20	State-resolved and two-temperature rate coefficients for CO+CO=CO2+C reaction. IOP Conference Series: Materials Science and Engineering, 2020, 927, 012001.	0.3	0
21	Improvement of the Landau-Teller model for CO2 on the basis of the Chapmanâ€“Enskog method. IOP Conference Series: Materials Science and Engineering, 2020, 927, 012047.	0.3	1
22	Models validation and code profiling in state-to-state simulations of shock heated air flows. Acta Astronautica, 2020, 175, 493-509.	1.7	33
23	Influence of angular momentum on transport coefficients in rarefied gases. Physica A: Statistical Mechanics and Its Applications, 2020, 553, 124673.	1.2	1
24	Vibrational relaxation of carbon dioxide in state-to-state and multi-temperature approaches. Physical Review Fluids, 2020, 5, .	1.0	15
25	Numerical Simulations of Shock Waves in Viscous Carbon Dioxide Flows Using Finite Volume Method. Vestnik St Petersburg University: Mathematics, 2020, 53, 344-350.	0.1	6
26	Kinetic Theory and Thermodynamics, Non-equilibrium Reacting Gas Flows. , 2020, , 1397-1405.		0
27	Overview and perspectives of KAPPA library. AIP Conference Proceedings, 2019, , .	0.3	0
28	State-resolved models of vibration-dissociation coupling in carbon dioxide. AIP Conference Proceedings, 2019, , .	0.3	1
29	Assessment of recent thermo-chemical relaxation models using the DLR-TAU code. AIP Conference Proceedings, 2019, , .	0.3	1
30	Models for bulk viscosity in carbon dioxide. AIP Conference Proceedings, 2019, , .	0.3	7
31	Shock waves in carbon dioxide: Simulations using different kinetic-theory models. AIP Conference Proceedings, 2019, , .	0.3	4
32	State-resolved transport properties of atomic and molecular mixtures. AIP Conference Proceedings, 2019, , .	0.3	0
33	Dynamics of Focused Pulsed Microwave Discharge in Air. Plasma Physics Reports, 2019, 45, 602-609.	0.3	22
34	Relaxation processes in carbon dioxide. Physics of Fluids, 2019, 31, .	1.6	51
35	Rotational Energy Relaxation Time for Vibrationally Excited Molecules. Vestnik St Petersburg University: Mathematics, 2019, 52, 81-91.	0.1	4
36	State-Resolved Transport Properties of Electronically Excited High-Temperature Flows Behind Strong Shock Waves. , 2019, , 201-209.		2

#	Article	IF	Citations
37	State-Resolved Dissociation and Exchange Reactions in CO₂ Flows. Journal of Physical Chemistry A, 2019, 123, 10529-10542.	1.1	20
38	KAPPA: Kinetic approach to physical processes in atmospheres library in C++. Computer Physics Communications, 2019, 236, 244-267.	3.0	12
39	Validation of vibration-dissociation coupling models in hypersonic non-equilibrium separated flows. Acta Astronautica, 2018, 144, 147-159.	1.7	36
40	The influence of vibrational state-resolved transport coefficients on the wave propagation in diatomic gases. Physica A: Statistical Mechanics and Its Applications, 2018, 490, 92-113.	1.2	21
41	Kinetic Theory and Thermodynamics, Non-equilibrium Reacting Gas Flows. , 2018, , 1-9.		0
42	State-specific transport properties of electronically excited Ar and C. AIP Conference Proceedings, 2018, , .	0.3	2
43	Effect of Asymmetric Mode on CO₂ State-to-State Vibrational-Chemical Kinetics. Journal of Physical Chemistry A, 2018, 122, 8709-8721.	1.1	16
44	Rate coefficients of exchange reactions accounting for vibrational excitation of reagents and products. AIP Conference Proceedings, 2018, , .	0.3	12
45	Mechanisms of Coupled Vibrational Relaxation and Dissociation in Carbon Dioxide. Journal of Physical Chemistry A, 2018, 122, 5107-5120.	1.1	41
46	Various continuum approaches for studying shock wave structure in carbon dioxide. AIP Conference Proceedings, 2018, , .	0.3	5
47	Kinetics of CO Molecules Taking into Account Resonant VE Exchanges in a Nonequilibrium Nozzle Flow. Technical Physics, 2018, 63, 331-338.	0.2	2
48	Validation of Models of State-to-State Oxygen Kinetics behind Shock Waves. Physical-Chemical Kinetics in Gas Dynamics, 2018, 19, 1-8.	0.1	4
49	Refinement of state-resolved models for chemical kinetics using the data of trajectory calculations. Physical-Chemical Kinetics in Gas Dynamics, 2018, 19, 1-14.	0.1	5
50	Rate Coefficients of Exchange Reactions in Air and Carbon Dioxide. Physical-Chemical Kinetics in Gas Dynamics, 2018, 19, 1-10.	0.1	0
51	State-specific transport properties of partially ionized flows of electronically excited atomic gases. Chemical Physics, 2017, 485-486, 125-139.	0.9	21
52	Transport coefficients and heat fluxes in non-equilibrium high-temperature flows with electronic excitation. Physics of Plasmas, 2017, 24, .	0.7	21
53	On the applicability of simplified state-to-state models of transport coefficients. Chemical Physics Letters, 2017, 686, 161-166.	1.2	17
54	Spatially homogeneous relaxation of CO molecules with resonant VE transitions. Vestnik St Petersburg University: Mathematics, 2017, 50, 188-197.	0.1	4

#	Article	IF	Citations
55	Shock wave structure in CO2 taking into account bulk viscosity. St Petersburg University Vestnik Mathematics, 2017, 4(62), 642-653.	0.1	5
56	Heat flux and diffusion velocities behind shock wave: state-to-state approach. , 2017, , .		0
57	Generalized Treanorâ€“Marrone model for state-specific dissociation rate coefficients. Chemical Physics Letters, 2016, 659, 80-87.	1.2	35
58	Influence of state-to-state vibrational distributions on transport coefficients of a single gas. AIP Conference Proceedings, 2016, , .	0.3	3
59	Numerical simulation of coupled state-to-state kinetics and heat transfer in viscous non-equilibrium flows. AIP Conference Proceedings, 2016, , .	0.3	5
60	Similarity criteria in vibrationally and electronically excited gases. AIP Conference Proceedings, 2016, , .	0.3	1
61	Sensitivity of heat fluxes in hypersonic CO2 flows to the state-to-state kinetic schemes. AIP Conference Proceedings, 2016, , .	0.3	4
62	Heat and mass transfer in reacting mixtures: Molecular dynamics and kinetic theory approaches. AIP Conference Proceedings, 2016, , .	0.3	0
63	Vibration-dissociation coupling in multi-temperature viscous gas flows. AIP Conference Proceedings, 2016, , .	0.3	0
64	Mutual effect of vibrational relaxation and chemical reactions in viscous multitemperature flows. Physical Review E, 2016, 93, 033127.	0.8	23
65	Probabilities for DSMC modelling of CO2 vibrational kinetics. AIP Conference Proceedings, 2016, , .	0.3	2
66	Inverse Laplace transform as a tool for calculation of state-specific cross sections of inelastic collisions. AIP Conference Proceedings, 2016, , .	0.3	5
67	Effect of electronic excitation on high-temperature flows of ionized nitrogen and oxygen mixtures behind strong shock waves. AIP Conference Proceedings, 2016, , .	0.3	6
68	Improvement of simple models for state-to-state and multi-temperature reaction rate coefficients. AIP Conference Proceedings, 2016, , .	0.3	0
69	Inverse Laplace transformation for evaluation of state-specific cross sections for dissociation reaction and vibrational energy transitions. Vestnik St Petersburg University: Mathematics, 2016, 49, 389-397.	0.1	4
70	State-to-state kinetics and transport properties of electronically excited N and O atoms. AIP Conference Proceedings, 2016, , .	0.3	5
71	Development and testing of a numerical simulation method for thermally nonequilibrium dissociating flows in ANSYS Fluent. Thermophysics and Aeromechanics, 2016, 23, 151-163.	0.1	37
72	Advanced Models for Vibrational and Chemical Kinetics Applied to Mars Entry Aerothermodynamics. Journal of Thermophysics and Heat Transfer, 2016, 30, 705-720.	0.9	39

#	Article	IF	Citations
73	Advanced models for vibrationalâ€“chemical coupling in multi-temperature flows. Chemical Physics, 2016, 464, 1-13.	0.9	56
74	Influence of variable molecular diameter on the viscosity coefficient in the state-to-state approach. St Petersburg University Vestnik Mathematics, 2016, 3(61), 457-467.	0.1	4
75	State-to-State Kinetic Model for a Viscous Radiating Hypersonic Flow. , 2015, , .		6
76	Reaction and internal energy relaxation rates in viscous thermochemically non-equilibrium gas flows. Physics of Fluids, 2015, 27, .	1.6	39
77	Effect of molecular diameters on state-to-state transport properties: The shear viscosity coefficient. Chemical Physics Letters, 2015, 636, 84-89.	1.2	15
78	Bulk-viscosity effect on CO2 hypersonic flow around blunt bodies. Doklady Physics, 2015, 60, 207-209.	0.2	9
79	Non-equilibrium kinetics, diffusion and heat transfer in shock heated flows of N2/N and O2/O mixtures. Chemical Physics, 2015, 463, 70-81.	0.9	37
80	Electronic Excitation Modeling in Chemically Reacting Hypersonic Flows. , 2015, , 161-166.		1
81	Reacting gas mixtures in the state-to-state approach: The chemical reaction rates. , 2014, , .		0
82	The influence of state-to-state kinetics on diffusion and heat transfer behind shock waves. , 2014, , .		2
83	Effect of electronic excitation on high-temperature flows behind strong shock waves. , 2014, , .		4
84	Validity of Eucken formula and Stokesâ€™ viscosity relation in high-temperature electronically excited gases. , 2014, , .		5
85	Mars sample return orbiter: Detailed vibrational-chemical kinetics and heat transfer. , 2014, , .		2
86	Self-diffusion of vibrational states: Impact on the heat transfer in hypersonic flows. AIP Conference Proceedings, 2014, , .	0.3	1
87	Rates of VT transitions and dissociation and normal mean stress in a non-equilibrium viscous multitemperature N2/N flow. , 2014, , .		4
88	Eucken correction in high-temperature gases with electronic excitation. Journal of Chemical Physics, 2014, 140, 184311.	1.2	23
89	On different contributions to the heat flux and diffusion in non-equilibrium flows. Chemical Physics, 2014, 428, 90-104.	0.9	44
90	Chemical reaction rates and non-equilibrium pressure of reacting gas mixtures in the state-to-state approach. Chemical Physics, 2014, 445, 82-94.	0.9	29

#	Article	IF	Citations
91	Influence of State-to-State Transport Coefficients on Surface Heat Transfer in Hypersonic Flows. , 2014, , .		9
92	State-to-state models for CO2 molecules: From the theory to an application to hypersonic boundary layers. Chemical Physics, 2013, 415, 269-281.	0.9	90
93	Transport properties of partially ionized atomic gases with electronic excitation. , 2013, , .		1
94	CO[sub 2] state-to-state kinetics and transport in a hypersonic boundary layer: Preliminary results. , 2012, , .		0
95	Normal mean stress in non-equilibrium viscous N[sub 2]âˆ•N flows with dissociation and electronic excitation. , 2012, , .		3
96	Scalar forces/fluxes and reciprocity relations in flows with strong thermal and chemical non-equilibrium. AIP Conference Proceedings, 2012, , .	0.3	7
97	Transport properties of five-component nitrogen and oxygen ionized mixtures with electronic excitation. , 2012, , .		3
98	The influence of CO[sub 2] kinetics on the hypersonic flow near blunt bodies. , 2012, , .		2
99	Non-equilibrium Kinetics and Transport Properties behind Shock Waves. , 2012, , 59-98.		0
100	High Temperature Phenomena in Shock Waves. , 2012, , .		15
101	Influence of Electronic Excitation on Transport Properties of Partially Ionized Atomic Gases. , 2012, , 119-124.		0
102	Kinetic model for multi-temperature flows of reacting carbon dioxide mixture. Chemical Physics, 2012, 398, 111-117.	0.9	63
103	Chemical Derivatives and Elemental Transport Coefficients in Plasma Flows Near Local Equilibrium. , 2011, , .		0
104	Non-Equilibrium Kinetics and Transport Processes in a Hypersonic Flow of CO[sub 2]âˆ•COâˆ•O[sub 2]âˆ•Câˆ•O Mixture. , 2011, , .		3
105	Transport Properties of Electronically Excited N[sub 2]âˆ•N and O[sub 2]âˆ•O Mixtures. , 2011, , .		6
106	State-to-State Kinetic Theory Approach for Transport and Relaxation Processes in Viscous Reacting Gas Flows. , 2011, , .		0
107	Thermal Relaxation Rate in Viscous Multi-Temperature Gas Flows. , 2011, , .		1
108	Numerical simulation of hypersonic flows around space vehicles descending in the Martian atmosphere. Mathematical Models and Computer Simulations, 2011, 3, 205-224.	0.1	10

#	Article	IF	Citations
109	Comparison of different models for non-equilibrium CO2 flows in a shock layer near a blunt body. Shock Waves, 2011, 21, 273-287.	1.0	48
110	Cross-coupling effects in chemically non-equilibrium viscous compressible flows. Chemical Physics, 2011, 379, 83-91.	0.9	37
111	Non-Equilibrium Reacting Gas Flows. Heat and Mass Transfer, 2009, , .	0.2	195
112	Transport coefficients in nonequilibrium gas-mixture flows with electronic excitation. Physical Review E, 2009, 80, 046407.	0.8	32
113	Elemental transport coefficients in viscous plasma flows near local thermodynamic equilibrium. Physical Review E, 2009, 79, 056309.	0.8	8
114	Non-equilibrium Kinetics and its Influence on the Transport Processes Behind Strong Shock Waves. Heat and Mass Transfer, 2009, , 191-202.	0.2	0
115	Kinetic Equations and Method of Small Parameter. Heat and Mass Transfer, 2009, , 7-33.	0.2	0
116	Non-equilibrium Kinetics and Its Influence on the Parameters of Nozzle Flows. Heat and Mass Transfer, 2009, , 221-233.	0.2	0
117	Heat Transfer and Diffusion in a Non-equilibrium Boundary Layer. Heat and Mass Transfer, 2009, , 203-220.	0.2	0
118	Reaction Rate Coefficients. Heat and Mass Transfer, 2009, , 171-190.	0.2	0
119	Multi-Temperature Models in Transport and Relaxation Theory. Heat and Mass Transfer, 2009, , 55-95.	0.2	0
120	One-Temperature Model for Chemically Non-equilibrium Gas Mixtures. Heat and Mass Transfer, 2009, , 97-109.	0.2	0
121	On the Role of Bulk Viscosity and Relaxation Pressure in Non-Equilibrium Flows. , 2008, , .		10
122	Detailed Vibrational-Chemical Kinetics and Transport Properties in a Non-Equilibrium Stagnation Line Flow. , 2008, , .		1
123	Chemical-Reaction Rates in Non-equilibrium Viscous Compressible Flows. , 2008, , .		0
124	Self-Consistent and Simplified Descriptions of Vibrational Non-Equilibrium CO[sub 2] Flows. , 2008, , .		1
125	State-to-State Simulation of Nonequilibrium Nitrogen Stagnation-Line Flows: Fluid Dynamics and Vibrational Kinetics. Journal of Thermophysics and Heat Transfer, 2008, 22, 390-398.	0.9	20
126	Single-stage plasma-arc synthesis of metallo-endofullerences. Russian Journal of Applied Chemistry, 2007, 80, 1888-1893.	0.1	1

#	Article	IF	Citations
127	On a correct description of a multi-temperature dissociating CO2 flow. Chemical Physics, 2006, 321, 293-310.	0.9	77
128	Chemical composition of extracts from shungite and â€œshungite waterâ€• Russian Journal of Applied Chemistry, 2006, 79, 29-33.	0.1	4
129	Activation of the carbon component of shungite-III and the sorption capacity of the material for hydrogen. Russian Journal of Applied Chemistry, 2006, 79, 1423-1427.	0.1	4
130	State-to-State Catalytic Models, Kinetics, and Transport in Hypersonic Boundary Layers. Journal of Thermophysics and Heat Transfer, 2006, 20, 465-476.	0.9	49
131	State-to-state reaction rates in gases with vibrationâ€“electronicâ€“dissociation coupling: the influence on a radiative shock heated CO flow. Chemical Physics, 2005, 314, 37-47.	0.9	36
132	State-to-state Kinetics and Transport Properties of a Reactive Air Flow Near a Re-entering Body Surface. AIP Conference Proceedings, 2005, , .	0.3	0
133	Transport Properties of Equilibrium Argon Plasma in a Magnetic Field. AIP Conference Proceedings, 2005, , .	0.3	0
134	State-to-State Reaction Rate Coefficients, Distributions and Gas Dynamics Behind Strong Shock Waves. AIP Conference Proceedings, 2005, , .	0.3	5
135	Non-equilibrium Effects in Reacting Gas Flows. AIP Conference Proceedings, 2005, , .	0.3	0
136	Deviations from the Mass Action Law in Non-equilibrium Gas Flows. AIP Conference Proceedings, 2005, , .	0.3	1
137	Vibration-Electronic Kinetics and Radiation in a Non-equilibrium CO Flow Behind a Shock Wave. AIP Conference Proceedings, 2005, , .	0.3	0
138	State-to-state dissociation rate coefficients in electronically excited diatomic gases. Chemical Physics Letters, 2004, 390, 370-375.	1.2	19
139	Non-equilibrium dissociation rates in expanding flows. Chemical Physics Letters, 2003, 377, 663-671.	1.2	23
140	Non-Equilibrium Kinetics and Transport Properties in Reacting Flows in Nozzles. AIP Conference Proceedings, 2003, , .	0.3	0
141	Non-Equilibrium Distributions and Heat Transfer Near a Catalytic Surface of Re-Entering Bodies. AIP Conference Proceedings, 2003, , .	0.3	1
142	Heat Transfer and Diffusion in Mixtures Containing CO2. AIP Conference Proceedings, 2003, , .	0.3	4
143	Nonequilibrium kinetics of a radiative CO flow behind a shock wave. Physical Review E, 2003, 68, 056306.	0.8	41
144	Nonequilibrium Kinetics and Heat Transfer in O/O Mixtures near Catalytic Surfaces. Journal of Thermophysics and Heat Transfer, 2002, 16, 238-244.	0.9	44

#	Article	IF	Citations
145	On the non-equilibrium kinetics and heat transfer in nozzle flows. Chemical Physics, 2002, 276, 139-154.	0.9	53
146	State-to-state kinetic description of non-equilibrium radiative gas flow. AIP Conference Proceedings, 2001, , .	0.3	0
147	State-to-state theory of vibrational kinetics and dissociation in three-atomic gases. AIP Conference Proceedings, 2001, , .	0.3	27
148	Vibration-dissociation coupling in nonequilibrium CO[sub 2]/N[sub 2] mixtures. AIP Conference Proceedings, 2001, , .	0.3	1
149	Calculation of Transport Coefficients with Vibrational Nonequilibrium. Journal of Thermophysics and Heat Transfer, 2001, 15, 70-75.	0.9	6
150	Strong non-equilibrium quasi-stationary model for dissociation-recombination in expanding flows. AIP Conference Proceedings, 2001, , .	0.3	0
151	Modeling of dissociationâ€“recombination in nozzles using strongly non-equilibrium vibrational distributions. Chemical Physics, 2001, 263, 111-126.	0.9	25
152	On the simplified state-to-state transport coefficients. Chemical Physics, 2001, 270, 177-195.	0.9	75
153	On the accuracy of non-equilibrium transport coefficients calculation. Chemical Physics, 2001, 270, 459-469.	0.9	11
154	Multitemperature kinetic model for heat transfer in reacting gas mixture flows. Physics of Fluids, 2000, 12, 220-232.	1.6	40
155	Influence of Nonequilibrium Kinetics on Heat Transfer and Diffusion near Re-Entering Body. Journal of Thermophysics and Heat Transfer, 1999, 13, 210-218.	0.9	35
156	Non-equilibrium vibrational distributions and transport coefficients of N2(v)â€“N mixtures. Chemical Physics Letters, 1999, 308, 463-472.	1.2	16
157	Inclusion of vibrational nonequilibrium in the calculation of the transport coefficients for polyatomic gas mixtures. , 1999, , .		0
158	Effect of strong excitation of the CO2 asymmetric mode on transport properties. Chemical Physics, 1997, 216, 297-315.	0.9	15
159	The Influence of Non-Boltzmann Vibrational Distribution on Thermal Conductivity and Viscosity. , 1996, , 383-392.		10
160	Advanced state-to-state and multi-temperature models for flow regimes. , 0, , .		0