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	Non-Equilibrium Reacting Gas Flows. Heat and Mass Transfer, 2009, , .	0.2	195
2	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
3	On a correct description of a multi-temperature dissociating CO2 flow. Chemical Physics, 2006, 321, 293-310.	0.9	77
4	On the simplified state-to-state transport coefficients. Chemical Physics, 2001, 270, 177-195.	0.9	75
5	Kinetic model for multi-temperature flows of reacting carbon dioxide mixture. Chemical Physics, 2012, 398, 111-117.	0.9	63
6	Advanced models for vibrationalâ€“chemical coupling in multi-temperature flows. Chemical Physics, 2016, 464, 1-13.	0.9	56
7	On the non-equilibrium kinetics and heat transfer in nozzle flows. Chemical Physics, 2002, 276, 139-154.	0.9	53
8	Relaxation processes in carbon dioxide. Physics of Fluids, 2019, 31, .	1.6	51
9	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
10	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
11	Advances in non-equilibrium $$\hbox {CO}_2$$ plasma kinetics: a theoretical and experimental review. European Physical Journal D, 2021, 75, 1.	0.6	47
12	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
13	On different contributions to the heat flux and diffusion in non-equilibrium flows. Chemical Physics, 2014, 428, 90-104.	0.9	44
14	Nonequilibrium kinetics of a radiative CO flow behind a shock wave. Physical Review E, 2003, 68, 056306.	0.8	41
15	Mechanisms of Coupled Vibrational Relaxation and Dissociation in Carbon Dioxide. Journal of Physical Chemistry A, 2018, 122, 5107-5120.	1.1	41
16	Multitemperature kinetic model for heat transfer in reacting gas mixture flows. Physics of Fluids, 2000, 12, 220-232.	1.6	40
17	Reaction and internal energy relaxation rates in viscous thermochemically non-equilibrium gas flows. Physics of Fluids, 2015, 27, .	1.6	39
18	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

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19	Cross-coupling effects in chemically non-equilibrium viscous compressible flows. Chemical Physics, 2011, 379, 83-91.	0.9	37
20	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
21	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
22	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
23	Validation of vibration-dissociation coupling models in hypersonic non-equilibrium separated flows. Acta Astronautica, 2018, 144, 147-159.	1.7	36
24	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
25	Generalized Treanorâ€“Marrone model for state-specific dissociation rate coefficients. Chemical Physics Letters, 2016, 659, 80-87.	1.2	35
26	Models validation and code profiling in state-to-state simulations of shock heated air flows. Acta Astronautica, 2020, 175, 493-509.	1.7	33
27	Transport coefficients in nonequilibrium gas-mixture flows with electronic excitation. Physical Review E, 2009, 80, 046407.	0.8	32
28	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
29	State-to-state theory of vibrational kinetics and dissociation in three-atomic gases. AIP Conference Proceedings, 2001, , .	0.3	27
30	Modeling of dissociationâ€“recombination in nozzles using strongly non-equilibrium vibrational distributions. Chemical Physics, 2001, 263, 111-126.	0.9	25
31	Non-equilibrium dissociation rates in expanding flows. Chemical Physics Letters, 2003, 377, 663-671.	1.2	23
32	Eucken correction in high-temperature gases with electronic excitation. Journal of Chemical Physics, 2014, 140, 184311.	1.2	23
33	Mutual effect of vibrational relaxation and chemical reactions in viscous multitemperature flows. Physical Review E, 2016, 93, 033127.	0.8	23
34	Dynamics of Focused Pulsed Microwave Discharge in Air. Plasma Physics Reports, 2019, 45, 602-609.	0.3	22
35	Multi-temperature vibrational energy relaxation rates in CO2. Physics of Fluids, 2020, 32, .	1.6	22
36	State-specific transport properties of partially ionized flows of electronically excited atomic gases. Chemical Physics, 2017, 485-486, 125-139.	0.9	21

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37	Transport coefficients and heat fluxes in non-equilibrium high-temperature flows with electronic excitation. Physics of Plasmas, 2017, 24, .	0.7	21
38	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
39	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
40	State-Resolved Dissociation and Exchange Reactions in CO₂ Flows. Journal of Physical Chemistry A, 2019, 123, 10529-10542.	1.1	20
41	State-to-state dissociation rate coefficients in electronically excited diatomic gases. Chemical Physics Letters, 2004, 390, 370-375.	1.2	19
42	On the applicability of simplified state-to-state models of transport coefficients. Chemical Physics Letters, 2017, 686, 161-166.	1.2	17
43	Non-equilibrium vibrational distributions and transport coefficients of N2(v)â€“N mixtures. Chemical Physics Letters, 1999, 308, 463-472.	1.2	16
44	Effect of Asymmetric Mode on CO₂ State-to-State Vibrational-Chemical Kinetics. Journal of Physical Chemistry A, 2018, 122, 8709-8721.	1.1	16
45	Four-temperature kinetic model for CO2 vibrational relaxation. Physics of Fluids, 2021, 33, .	1.6	16
46	Effect of strong excitation of the CO2 asymmetric mode on transport properties. Chemical Physics, 1997, 216, 297-315.	0.9	15
47	High Temperature Phenomena in Shock Waves. , 2012, , .		15
48	Effect of molecular diameters on state-to-state transport properties: The shear viscosity coefficient. Chemical Physics Letters, 2015, 636, 84-89.	1.2	15
49	Vibrational relaxation of carbon dioxide in state-to-state and multi-temperature approaches. Physical Review Fluids, 2020, 5, .	1.0	15
50	Kinetic and Continuum Modeling of High-Temperature Air Relaxation. Journal of Thermophysics and Heat Transfer, 2022, 36, 870-893.	0.9	14
51	Rate coefficients of exchange reactions accounting for vibrational excitation of reagents and products. AIP Conference Proceedings, 2018, , .	0.3	12
52	KAPPA: Kinetic approach to physical processes in atmospheres library in C++. Computer Physics Communications, 2019, 236, 244-267.	3.0	12
53	Dynamics of plasma formation and gas heating in a focused-microwave discharge in nitrogen. Journal of Applied Physics, 2021, 129, .	1.1	12
54	On the accuracy of non-equilibrium transport coefficients calculation. Chemical Physics, 2001, 270, 459-469.	0.9	11

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55	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
56	The Influence of Non-Boltzmann Vibrational Distribution on Thermal Conductivity and Viscosity. , 1996, , 383-392.		10
57	On the Role of Bulk Viscosity and Relaxation Pressure in Non-Equilibrium Flows. , 2008, , .		10
58	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
59	Hybrid approach to accurate modeling of coupled vibrational-chemical kinetics in carbon dioxide. Physics of Fluids, 2022, 34, .	1.6	10
60	Influence of State-to-State Transport Coefficients on Surface Heat Transfer in Hypersonic Flows. , 2014, , .		9
61	Bulk-viscosity effect on CO2 hypersonic flow around blunt bodies. Doklady Physics, 2015, 60, 207-209.	0.2	9
62	Elemental transport coefficients in viscous plasma flows near local thermodynamic equilibrium. Physical Review E, 2009, 79, 056309.	0.8	8
63	Scalar forces/fluxes and reciprocity relations in flows with strong thermal and chemical non-equilibrium. AIP Conference Proceedings, 2012, , .	0.3	7
64	Models for bulk viscosity in carbon dioxide. AIP Conference Proceedings, 2019, , .	0.3	7
65	Extended continuum models for shock waves in CO2. Physics of Fluids, 2021, 33, .	1.6	7
66	Calculation of Transport Coefficients with Vibrational Nonequilibrium. Journal of Thermophysics and Heat Transfer, 2001, 15, 70-75.	0.9	6
67	Transport Properties of Electronically Excited N[sub 2]âˆ•N and O[sub 2]âˆ•O Mixtures. , 2011, , .		6
68	State-to-State Kinetic Model for a Viscous Radiating Hypersonic Flow. , 2015, , .		6
69	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
70	Novel approach for evaluation of CO2 vibrational relaxation times. Chemical Physics Letters, 2021, 764, 138288.	1.2	6
71	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
72	State-specific boundary conditions for nonequilibrium gas flows in slip regime. Physical Review E, 2022, 105, 034126.	0.8	6

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73	State-to-State Reaction Rate Coefficients, Distributions and Gas Dynamics Behind Strong Shock Waves. AIP Conference Proceedings, 2005, , .	0.3	5
74	Validity of Eucken formula and Stokesâ€™ viscosity relation in high-temperature electronically excited gases. , 2014, , .		5
75	Numerical simulation of coupled state-to-state kinetics and heat transfer in viscous non-equilibrium flows. AIP Conference Proceedings, 2016, , .	0.3	5
76	Inverse Laplace transform as a tool for calculation of state-specific cross sections of inelastic collisions. AIP Conference Proceedings, 2016, , .	0.3	5
77	State-to-state kinetics and transport properties of electronically excited N and O atoms. AIP Conference Proceedings, 2016, , .	0.3	5
78	Various continuum approaches for studying shock wave structure in carbon dioxide. AIP Conference Proceedings, 2018, , .	0.3	5
79	Shock wave structure in CO2 taking into account bulk viscosity. St Petersburg University Vestnik Mathematics, 2017, 4(62), 642-653.	0.1	5
80	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
81	Heat Transfer and Diffusion in Mixtures Containing CO2. AIP Conference Proceedings, 2003, , .	0.3	4
82	Chemical composition of extracts from shungite and â€œshungite waterâ€• Russian Journal of Applied Chemistry, 2006, 79, 29-33.	0.1	4
83	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
84	Effect of electronic excitation on high-temperature flows behind strong shock waves. , 2014, , .		4
85	Rates of VT transitions and dissociation and normal mean stress in a non-equilibrium viscous multitemperature N2/N flow. , 2014, , .		4
86	Sensitivity of heat fluxes in hypersonic CO2 flows to the state-to-state kinetic schemes. AIP Conference Proceedings, 2016, , .	0.3	4
87	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
88	Spatially homogeneous relaxation of CO molecules with resonant VE transitions. Vestnik St Petersburg University: Mathematics, 2017, 50, 188-197.	0.1	4
89	Shock waves in carbon dioxide: Simulations using different kinetic-theory models. AIP Conference Proceedings, 2019, , .	0.3	4
90	Rotational Energy Relaxation Time for Vibrationally Excited Molecules. Vestnik St Petersburg University: Mathematics, 2019, 52, 81-91.	0.1	4

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91	Investigation of shock wave structure in CO₂based on the continuum and DSMC approaches. Journal of Physics: Conference Series, 2021, 1959, 012032.	0.3	4
92	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
93	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
94	Editorial: Thermal and Non-Thermal Plasmas at Atmospheric Pressure. Frontiers in Physics, 2022, 10, .	1.0	4
95	Assessment of Machine Learning Methods for State-to-State Approach in Nonequilibrium Flow Simulations. Mathematics, 2022, 10, 928.	1.1	4
96	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
97	Normal mean stress in non-equilibrium viscous N[sub 2]âˆ•N flows with dissociation and electronic excitation. , 2012, , .		3
98	Transport properties of five-component nitrogen and oxygen ionized mixtures with electronic excitation. , 2012, , .		3
99	Influence of state-to-state vibrational distributions on transport coefficients of a single gas. AIP Conference Proceedings, 2016, , .	0.3	3
100	Generalized model for state-resolved chemical reaction rate coefficients in high-temperature air. Journal of Physics: Conference Series, 2021, 1959, 012033.	0.3	3
101	PAINeT: Implementation of neural networks for transport coefficients calculation. Journal of Physics: Conference Series, 2021, 1959, 012024.	0.3	3
102	The influence of CO[sub 2] kinetics on the hypersonic flow near blunt bodies. , 2012, , .		2
103	The influence of state-to-state kinetics on diffusion and heat transfer behind shock waves. , 2014, , .		2
104	Mars sample return orbiter: Detailed vibrational-chemical kinetics and heat transfer. , 2014, , .		2
105	Probabilities for DSMC modelling of CO2 vibrational kinetics. AIP Conference Proceedings, 2016, , .	0.3	2
106	State-specific transport properties of electronically excited Ar and C. AIP Conference Proceedings, 2018, , .	0.3	2
107	Kinetics of CO Molecules Taking into Account Resonant VE Exchanges in a Nonequilibrium Nozzle Flow. Technical Physics, 2018, 63, 331-338.	0.2	2
108	State-Resolved Transport Properties of Electronically Excited High-Temperature Flows Behind Strong Shock Waves. , 2019, , 201-209.		2

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109	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
110	Vibration-dissociation coupling in nonequilibrium CO[sub 2]/N[sub 2] mixtures. AIP Conference Proceedings, 2001, , .	0.3	1
111	Non-Equilibrium Distributions and Heat Transfer Near a Catalytic Surface of Re-Entering Bodies. AIP Conference Proceedings, 2003, , .	0.3	1
112	Deviations from the Mass Action Law in Non-equilibrium Gas Flows. AIP Conference Proceedings, 2005, , .	0.3	1
113	Single-stage plasma-arc synthesis of metallo-endofullerences. Russian Journal of Applied Chemistry, 2007, 80, 1888-1893.	0.1	1
114	Detailed Vibrational-Chemical Kinetics and Transport Properties in a Non-Equilibrium Stagnation Line Flow. , 2008, , .		1
115	Self-Consistent and Simplified Descriptions of Vibrational Non-Equilibrium CO[sub 2] Flows. , 2008, , .		1
116	Thermal Relaxation Rate in Viscous Multi-Temperature Gas Flows. , 2011, , .		1
117	Self-diffusion of vibrational states: Impact on the heat transfer in hypersonic flows. AIP Conference Proceedings, 2014, , .	0.3	1
118	Electronic Excitation Modeling in Chemically Reacting Hypersonic Flows. , 2015, , 161-166.		1
119	Similarity criteria in vibrationally and electronically excited gases. AIP Conference Proceedings, 2016, , .	0.3	1
120	State-resolved models of vibration-dissociation coupling in carbon dioxide. AIP Conference Proceedings, 2019, , .	0.3	1
121	Assessment of recent thermo-chemical relaxation models using the DLR-TAU code. AIP Conference Proceedings, 2019, , .	0.3	1
122	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
123	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
124	Influence of angular momentum on transport coefficients in rarefied gases. Physica A: Statistical Mechanics and Its Applications, 2020, 553, 124673.	1.2	1
125	Transport properties of partially ionized atomic gases with electronic excitation. , 2013, , .		1
126	State-to-state kinetic description of non-equilibrium radiative gas flow. AIP Conference Proceedings, 2001, , .	0.3	0

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127	Strong non-equilibrium quasi-stationary model for dissociation-recombination in expanding flows. AIP Conference Proceedings, 2001, , .	0.3	0
128	Non-Equilibrium Kinetics and Transport Properties in Reacting Flows in Nozzles. AIP Conference Proceedings, 2003, , .	0.3	0
129	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
130	Transport Properties of Equilibrium Argon Plasma in a Magnetic Field. AIP Conference Proceedings, 2005, , .	0.3	0
131	Non-equilibrium Effects in Reacting Gas Flows. AIP Conference Proceedings, 2005, , .	0.3	0
132	Vibration-Electronic Kinetics and Radiation in a Non-equilibrium CO Flow Behind a Shock Wave. AIP Conference Proceedings, 2005, , .	0.3	0
133	Chemical-Reaction Rates in Non-equilibrium Viscous Compressible Flows. , 2008, , .		0
134	Chemical Derivatives and Elemental Transport Coefficients in Plasma Flows Near Local Equilibrium. , 2011, , .		0
135	State-to-State Kinetic Theory Approach for Transport and Relaxation Processes in Viscous Reacting Gas Flows. , 2011, , .		0
136	CO[sub 2] state-to-state kinetics and transport in a hypersonic boundary layer: Preliminary results. , 2012, , .		0
137	Non-equilibrium Kinetics and Transport Properties behind Shock Waves. , 2012, , 59-98.		0
138	Influence of Electronic Excitation on Transport Properties of Partially Ionized Atomic Gases. , 2012, , 119-124.		0
139	Reacting gas mixtures in the state-to-state approach: The chemical reaction rates. , 2014, , .		0
140	Heat and mass transfer in reacting mixtures: Molecular dynamics and kinetic theory approaches. AIP Conference Proceedings, 2016, , .	0.3	0
141	Vibration-dissociation coupling in multi-temperature viscous gas flows. AIP Conference Proceedings, 2016, , .	0.3	0
142	Improvement of simple models for state-to-state and multi-temperature reaction rate coefficients. AIP Conference Proceedings, 2016, , .	0.3	0
143	Kinetic Theory and Thermodynamics, Non-equilibrium Reacting Gas Flows. , 2018, , 1-9.		0
144	Overview and perspectives of KAPPA library. AIP Conference Proceedings, 2019, , .	0.3	0

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145	State-resolved transport properties of atomic and molecular mixtures. AIP Conference Proceedings, 2019, , .	0.3	0
146	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
147	State-to-state modeling of oxygen relaxation taking into account electron kinetics. Journal of Physics: Conference Series, 2021, 1959, 012034.	0.3	0
148	Calculation of vibrational relaxation times in carbon dioxide using forced harmonic oscillator model. AIP Conference Proceedings, 2021, , .	0.3	0
149	Non-equilibrium Kinetics and its Influence on the Transport Processes Behind Strong Shock Waves. Heat and Mass Transfer, 2009, , 191-202.	0.2	0
150	Kinetic Equations and Method of Small Parameter. Heat and Mass Transfer, 2009, , 7-33.	0.2	0
151	Non-equilibrium Kinetics and Its Influence on the Parameters of Nozzle Flows. Heat and Mass Transfer, 2009, , 221-233.	0.2	0
152	Heat Transfer and Diffusion in a Non-equilibrium Boundary Layer. Heat and Mass Transfer, 2009, , 203-220.	0.2	0
153	Reaction Rate Coefficients. Heat and Mass Transfer, 2009, , 171-190.	0.2	0
154	Multi-Temperature Models in Transport and Relaxation Theory. Heat and Mass Transfer, 2009, , 55-95.	0.2	0
155	One-Temperature Model for Chemically Non-equilibrium Gas Mixtures. Heat and Mass Transfer, 2009, , 97-109.	0.2	0
156	Inclusion of vibrational nonequilibrium in the calculation of the transport coefficients for polyatomic gas mixtures. , 1999, , .		0
157	Heat flux and diffusion velocities behind shock wave: state-to-state approach. , 2017, , .		0
158	Rate Coefficients of Exchange Reactions in Air and Carbon Dioxide. Physical-Chemical Kinetics in Gas Dynamics, 2018, 19, 1-10.	0.1	0
159	Advanced state-to-state and multi-temperature models for flow regimes. , 0, , .		0
160	Kinetic Theory and Thermodynamics, Non-equilibrium Reacting Gas Flows. , 2020, , 1397-1405.		0