Israel E Wachs

List of Publications by Citations

343 papers	29,590 citations	99 h-index	158 g-index
363 ext. papers	31,881 ext. citations	7.8 avg, IF	7.46 L-index

#	Paper	IF	Citations
343	Raman and IR studies of surface metal oxide species on oxide supports: Supported metal oxide catalysts. *Catalysis Today*, **1996**, 27, 437-455	5.3	668
342	Surface Chemistry and Spectroscopy of Chromium in Inorganic Oxides. *Chemical Reviews*, **1996**, 96, 3327-3350	38.1	637
341	Titania–silica as catalysts: molecular structural characteristics and physico-chemical properties. *Catalysis Today*, **1999**, 51, 233-254	5.3	557
340	Structure and reactivity of surface vanadium oxide species on oxide supports. *Applied Catalysis A: General*, **1997**, 157, 67-90	5.1	549
339	Structural chemistry and Raman spectra of niobium oxides. *Chemistry of Materials*, **1991**, 3, 100-107	9.6	486
338	The selective oxidation of CH3OH to H2CO on a copper(110) catalyst. *Journal of Catalysis*, **1978**, 53, 208-227	7.3	465
337	Recent conceptual advances in the catalysis science of mixed metal oxide catalytic materials. *Catalysis Today*, **2005**, 100, 79-94	5.3	445
336	Reactivity of Supported Vanadium Oxide Catalysts: The Partial Oxidation of Methanol. *Journal of Catalysis*, **1994**, 146, 323-334	7.3	422
335	Determination of vanadium-oxygen bond distances and bond orders by Raman spectroscopy. *The Journal of Physical Chemistry*, **1991**, 95, 5031-5041		405
334	Spectroscopic Characterization of Mixed Fe–Ni Oxide Electrocatalysts for the Oxygen Evolution Reaction in Alkaline Electrolytes. *ACS Catalysis*, **2012**, 2, 1793-1801	13.1	362
333	Alumina-Supported Manganese Oxide Catalysts. *Journal of Catalysis*, **1994**, 150, 94-104	7.3	358
332	Critical Literature Review of the Kinetics for the Oxidative Dehydrogenation of Propane over Well-Defined Supported Vanadium Oxide Catalysts. *ACS Catalysis*, **2014**, 4, 3357-3380	13.1	343
331	Solid-state vanadium-51 NMR structural studies on supported vanadium(V) oxide catalysts: vanadium oxide surface layers on alumina and titania supports. *The Journal of Physical Chemistry*, **1989**, 93, 6796-6805		337
330	The oxidation of methanol on a silver (110) catalyst. *Surface Science*, **1978**, 76, 531-558	1.8	327
329	In situ Raman spectroscopy of alumina-supported metal oxide catalysts. *The Journal of Physical Chemistry*, **1992**, 96, 5008-5016		311
328	Surface Structures of Supported Molybdenum Oxide Catalysts: Characterization by Raman and Mo L3-Edge XANES. *The Journal of Physical Chemistry*, **1995**, 99, 10897-10910		304
327	Acidic properties of supported niobium oxide catalysts: An infrared spectroscopy investigation. *Journal of Catalysis*, **1992**, 135, 186-199	7.3	292

326	In Situ Spectroscopic Investigation of Molecular Structures of Highly Dispersed Vanadium Oxide on Silica under Various Conditions. *Journal of Physical Chemistry B*, **1998**, 102, 10842-10852	3.4	290
325	Molecular structures of supported metal oxide catalysts under different environments. *Journal of Raman Spectroscopy*, **2002**, 33, 359-380	2.3	288
324	Investigation of Surface Structures of Supported Vanadium Oxide Catalysts by UV□vis□NIR Diffuse Reflectance Spectroscopy. *Journal of Physical Chemistry B*, **2000**, 104, 1261-1268	3.4	288
323	Structural Determination of Bulk and Surface Tungsten Oxides with UV□vis Diffuse Reflectance Spectroscopy and Raman Spectroscopy. *Journal of Physical Chemistry C*, **2007**, 111, 15089-15099	3.8	285
322	Preparation and in-Situ Spectroscopic Characterization of Molecularly Dispersed Titanium Oxide on Silica. *Journal of Physical Chemistry B*, **1998**, 102, 5653-5666	3.4	278
321	Predicting molecular structures of surface metal oxide species on oxide supports under ambient conditions. *The Journal of Physical Chemistry*, **1991**, 95, 5889-5895		274
320	Acidic properties of alumina-supported metal oxide catalysts: an infrared spectroscopy study. *The Journal of Physical Chemistry*, **1992**, 96, 5000-5007		256
319	Catalysis science of supported vanadium oxide catalysts. *Dalton Transactions*, **2013**, 42, 11762-9	4.3	255
318	Oxidation of sulfur dioxide to sulfur trioxide over supported vanadia catalysts. *Applied Catalysis B: Environmental*, **1998**, 19, 103-117	21.8	254
317	Catalysis. Identification of molybdenum oxide nanostructures on zeolites for natural gas conversion. *Science*, **2015**, 348, 686-90	33.3	242
316	Determination of molybdenum□oxygen bond distances and bond orders by Raman spectroscopy. *Journal of Raman Spectroscopy*, **1990**, 21, 683-691	2.3	242
315	In Situ Spectroscopic Investigation of the Molecular and Electronic Structures of SiO2 Supported Surface Metal Oxides. *Journal of Physical Chemistry C*, **2007**, 111, 14410-14425	3.8	234
314	Bonding states of surface vanadium(V) oxide phases on silica: structural characterization by vanadium-51 NMR and Raman spectroscopy. *The Journal of Physical Chemistry*, **1993**, 97, 8240-8243		232
313	Monitoring surface metal oxide catalytic active sites with Raman spectroscopy. *Chemical Society Reviews*, **2010**, 39, 5002-17	58.5	226
312	Reactivity of V2O5Catalysts for the Selective Catalytic Reduction of NO by NH3: Influence of Vanadia Loading, H2O, and SO2. *Journal of Catalysis*, **1996**, 161, 247-253	7.3	226
311	Structural determination of supported vanadium pentoxide-tungsten trioxide-titania catalysts by in situ Raman spectroscopy and x-ray photoelectron spectroscopy. *The Journal of Physical Chemistry*, **1991**, 95, 9928-9937		209
310	Methanol: A □mart□Chemical Probe Molecule. *Catalysis Letters*, **2001**, 75, 137-149	2.8	208
309	Selective Catalytic Reduction of NO with NH3over Supported Vanadia Catalysts. *Journal of Catalysis* , **1996**, 161, 211-221	7.3	208

308	In situ IR, Raman, and UV-Vis DRS spectroscopy of supported vanadium oxide catalysts during methanol oxidation. *Topics in Catalysis*, **2000**, 11/12, 85-100	2.3	199
307	A Perspective on the Selective Catalytic Reduction (SCR) of NO with NH3 by Supported V2O5□WO3/TiO2 Catalysts. *ACS Catalysis*, **2018**, 8, 6537-6551	13.1	197
306	The interaction of vanadium pentoxide with titania (anatase): Part I. Effect on o-xylene oxidation to phthalic anhydride. *Applied Catalysis*, **1985**, 15, 339-352		194
305	Olefin Metathesis by Supported Metal Oxide Catalysts. *ACS Catalysis*, **2014**, 4, 2505-2520	13.1	187
304	Iron-Based Catalysts for the High-Temperature Water□as Shift (HT-WGS) Reaction: A Review. *ACS Catalysis*, **2016**, 6, 722-732	13.1	181
303	Quantitative determination of the speciation of surface vanadium oxides and their catalytic activity. *Journal of Physical Chemistry B*, **2006**, 110, 9593-600	3.4	178
302	New insights into the nature of the acidic catalytic active sites present in ZrO2-supported tungsten oxide catalysts. *Journal of Catalysis*, **2008**, 256, 108-125	7.3	176
301	Raman spectroscopy of chromium oxide supported on Al2O3, TiO2 and SiO2: a comparative study. *Journal of Molecular Catalysis*, **1988**, 46, 173-186		174
300	Molecular structure and reactivity of the Group V metal oxides. *Catalysis Today*, **2003**, 78, 13-24	5.3	171
299	The origin of the support effect in supported metal oxide catalysts: in situ infrared and kinetic studies during methanol oxidation. *Catalysis Today*, **1999**, 49, 467-484	5.3	171
298	A Raman and ultraviolet diffuse reflectance spectroscopic investigation of silica-supported molybdenum oxide. *The Journal of Physical Chemistry*, **1991**, 95, 8781-8791		170
297	Combined DRS□RS□EXAFS□XANES□TPR study of supported chromium catalysts. *Journal of the Chemical Society, Faraday Transactions*, **1995**, 91, 3245-3253		167
296	The effect of metal oxide additives on the activity of V2O5/TiO2 catalysts for the selective catalytic reduction of nitric oxide by ammonia. *Applied Catalysis B: Environmental*, **1999**, 20, 111-122	21.8	166
295	The interaction of V2O5 with Ti02(anatase): Catalyst evolution with calcination temperature and O-xylene oxidation. *Journal of Catalysis*, **1986**, 98, 102-114	7.3	158
294	Catalysis Science of Bulk Mixed Oxides. *ACS Catalysis*, **2012**, 2, 1235-1246	13.1	157
293	Nature of Active Sites and Surface Intermediates during SCR of NO with NH□by Supported V□□WO⁄TiO□Catalysts. *Journal of the American Chemical Society*, **2017**, 139, 15624-15627	16.4	155
292	In Situ Raman Spectroscopy of SiO2-Supported Transition Metal Oxide Catalysts: An Isotopic 18O□16O Exchange Study. *Journal of Physical Chemistry C*, **2008**, 112, 6487-6498	3.8	154
291	Effect of Additives on the Structure and Reactivity of the Surface Vanadium Oxide Phase in V2O5/TiO2 Catalysts. *Journal of Catalysis*, **1994**, 146, 335-345	7.3	154

290	Isopropanol oxidation by pure metal oxide catalysts: number of active surface sites and turnover frequencies. *Applied Catalysis A: General*, **2002**, 237, 121-137	5.1	150
289	Characterization of titania silicalites. *Zeolites*, **1993**, 13, 365-373		150
288	Oxidative dehydrogenation of ethane to ethylene over alumina-supported vanadium oxide catalysts: Relationship between molecular structures and chemical reactivity. *Catalysis Today*, **2006**, 118, 279-287	5.3	148
287	The molecular structures and reactivity of supported niobium oxide catalysts. *Catalysis Today*, **1990**, 8, 37-55	5.3	146
286	The effect of the phase composition of model VPO catalysts for partial oxidation of n-butane. *Catalysis Today*, **1996**, 28, 275-295	5.3	140
285	Molecular/electronic structure–surface acidity relationships of model-supported tungsten oxide catalysts. *Journal of Catalysis*, **2007**, 246, 370-381	7.3	139
284	Catalysis science of the solid acidity of model supported tungsten oxide catalysts. *Catalysis Today*, **2006**, 116, 162-168	5.3	136
283	The oxidation of ethanol on Cu(110) and Ag(110) catalysts. *Applications of Surface Science*, **1978**, 1, 303-328		136
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281	The molecular structure of bismuth oxide by Raman spectroscopy. *Journal of Solid State Chemistry*, **1992**, 97, 319-331	3.3	131
280	Characterization of chromium oxide supported on Al2O3, ZrO2, TiO2, and SiO2 under dehydrated conditions. *Journal of Molecular Catalysis*, **1993**, 80, 209-227		131
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277	Structural and Reactivity Properties of Nb?MCM-41: Comparison with That of Highly Dispersed Nb2O5/SiO2 Catalysts. *Journal of Catalysis*, **2001**, 203, 18-24	7.3	124
276	Identification of active Zr-WO(x) clusters on a ZrO2 support for solid acid catalysts. *Nature Chemistry*, **2009**, 1, 722-8	17.6	123
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274	Effect of water vapor on the molecular structures of supported vanadium oxide catalysts at elevated temperatures. *Journal of Molecular Catalysis A*, **1996**, 110, 41-54		123
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271	Molecular Structures and Reactivity of Supported Molybdenum Oxide Catalysts. *Journal of Catalysis* , **1994**, 149, 268-277	7.3	117
270	Molecular Structural Determination of Molybdena in Different Environments: Aqueous Solutions, Bulk Mixed Oxides, and Supported MoO3 Catalysts. *Journal of Physical Chemistry C*, **2010**, 114, 14110-14120	3.8	115
269	Molecular structure and reactivity of the group V metal oxides. *Catalysis Today*, **2000**, 57, 323-330	5.3	115
268	In Situ Vibrational Spectroscopy Studies of Supported Niobium Oxide Catalysts. *Journal of Physical Chemistry B*, **1999**, 103, 6015-6024	3.4	115
267	Determination of the molecular structures of tungstates by Raman spectroscopy. *Journal of Raman Spectroscopy*, **1995**, 26, 397-405	2.3	115
266	In Situ UV□visNIR Diffuse Reflectance and Raman Spectroscopic Studies of Propane Oxidation over ZrO2-Supported Vanadium Oxide Catalysts. *Journal of Catalysis*, **2002**, 209, 43-50	7.3	113
265	Interaction of Polycrystalline Silver with Oxygen, Water, Carbon Dioxide, Ethylene, and Methanol: In Situ Raman and Catalytic Studies. *Journal of Physical Chemistry B*, **1999**, 103, 5645-5656	3.4	111
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263	A Raman and ultraviolet diffuse reflectance spectroscopic investigation of alumina-supported molybdenum oxide. *The Journal of Physical Chemistry*, **1991**, 95, 8791-8797		109
262	Molecular structure of molybdenum oxide in bismuth molybdates by Raman spectroscopy. *The Journal of Physical Chemistry*, **1991**, 95, 10763-10772		109
261	How strain affects the reactivity of surface metal oxide catalysts. *Angewandte Chemie - International Edition*, **2013**, 52, 13553-7	16.4	107
260	Catalysis Science of Methanol Oxidation over Iron Vanadate Catalysts: Nature of the Catalytic Active Sites. *ACS Catalysis*, **2011**, 1, 54-66	13.1	107
259	Fundamental Studies of Butane Oxidation over Model-Supported Vanadium Oxide Catalysts: Molecular Structure-Reactivity Relationships. *Journal of Catalysis*, **1997**, 170, 75-88	7.3	107
258	Remarkable spreading behavior of molybdena on silica catalysts. Anin situ EXAFS-Raman study. *Catalysis Letters*, **1991**, 11, 227-239	2.8	107
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256	In Situ Raman Spectroscopy of Supported Transition Metal Oxide Catalysts: 18O2□16O2 Isotopic Labeling Studies. *Journal of Physical Chemistry B*, **2000**, 104, 7382-7387	3.4	105
255	Oxidation of sulfur dioxide over supported vanadia catalysts: molecular structure □reactivity relationships and reaction kinetics. *Catalysis Today*, **1999**, 51, 301-318	5.3	105

254	Determination of niobium-oxygen bond distances and bond orders by Raman spectroscopy. *Solid State Ionics*, **1991**, 45, 201-213	3.3	105
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240	A Comparison of Ultraviolet and Visible Raman Spectra of Supported Metal Oxide Catalysts. *Journal of Physical Chemistry B*, **2001**, 105, 8600-8606	3.4	96
239	Oxidation of SO2over Supported Metal Oxide Catalysts. *Journal of Catalysis*, **1999**, 181, 233-243	7.3	96
238	In Situ Raman Spectroscopy of Supported Chromium Oxide Catalysts: Reactivity Studies with Methanol and Butane. *The Journal of Physical Chemistry*, **1996**, 100, 14437-14442		96
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234	Characterization of CrO3/Al2O3 catalysts under ambient conditions: Influence of coverage and calcination temperature. *Journal of Molecular Catalysis*, **1993**, 84, 193-205		94
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221	Quantitative determination of the number of active surface sites and the turnover frequencies for methanol oxidation over metal oxide catalysts. *Catalysis Today*, **2000**, 62, 219-229	5.3	85
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192	Applications of High Sensitivity-Low Energy Ion Scattering (HS-LEIS) in heterogeneous catalysis. *Catalysis Today*, **2009**, 140, 197-201	5.3	62
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13	A combined computational and experimental study of methane activation during oxidative coupling of methane (OCM) by surface metal oxide catalysts. *Chemical Science*, **2021**, 12, 14143-14158	9.4	1
12	Impact of Hydration on Supported V2O5/TiO2 Catalysts as Explored by Magnetic Resonance Spectroscopy. *Journal of Physical Chemistry C*, **2021**, 125, 16766-16775	3.8	1
11	New Mechanistic and Reaction Pathway Insights for Oxidative Coupling of Methane (OCM) over Supported Na2WO4/SiO2 Catalysts. *Angewandte Chemie*, **2021**, 133, 21672-21681	3.6	1
10	Partial Oxidation of Methane by Molecular Oxygen Over Supported V2O5 Catalysts: A Catalytic and in situ Raman Spectroscopy Study **1995**, 219-226		1
9	Molecular Design of Supported MoOx Catalysts with Surface TaOx Promotion for Olefin Metathesis. *ACS Catalysis*, **2022**, 12, 3226-3237	13.1	1
8	Innenrücktitelbild: Mechanism by which Tungsten Oxide Promotes the Activity of Supported V2O5/TiO2 Catalysts for NOX Abatement: Structural Effects Revealed by 51V MAS NMR Spectroscopy (Angew. Chem. 36/2019). *Angewandte Chemie*, **2019**, 131, 12847-12847	3.6	0
7	Use of Oxide Ligands in Designing Catalytic Active Sites1-23		0
6	The effect of non-redox promoters (AlOx, POx, SiOx and ZrOx) and surface sulfates on supported V2O5-WO3/TiO2 catalysts in selective catalytic reduction of NO with NH3. *Applied Catalysis B: Environmental*, **2022**, 306, 121128	21.8	0
5	Nature and Reactivity of Oxygen Species on/in Silver Catalysts during Ethylene Oxidation. *ACS Catalysis*,4375-4381	13.1	0
4	Proof of Equivalent Catalytic Functionality upon Photon-Induced and Thermal Activation of Supported Isolated Vanadia Species in Methanol Oxidation. *ChemCatChem*, **2018**, 10, 2325-2325	5.2	
3	Microstructural Development of Supported Pt/ZrO2/SiO2 Catalysts: The Effect of ZrO2 Nanoligands. *Microscopy and Microanalysis*, **2009**, 15, 1414-1415	0.5	

List of Publications

2	Oxidation Reactions over Supported Metal Oxide Catalysts: Molecular/Electronic Structure Activity/Selectivity Relationships487-498	
1	Oxidation of CH3CN over silver: formation of surface compounds. *Chemical Physics Letters*, **1982**, 88, 46-49	2.5