

## Most recent peer-reviewed publications

<p><i>Fast estimation of standard enthalpy of formation with chemical accuracy by artificial neural network correction of low-level-of-theory ab initio calculations</i> PP Plehiers, I Lengyel, DH West, GB Marin, CV Stevens, KM Van Geem <b>Chemical Engineering Journal</b> 426, 131304</p>
<p><i>Experimental and Computational Study of Natural Gas Pyrolysis in a Pilot-Scale Cracker</i> B Baek, B Nair, I Lengyel, L Chen, S Pannala, R VM, D West <b>Industrial &amp; Engineering Chemistry Research</b> 60 (19), 6993-7002</p>
<p><i>Predicting polycyclic aromatic hydrocarbon formation with an automatically generated mechanism for acetylene pyrolysis</i> M Liu, TC Chu, A Joche, MC Smith, I Lengyel, WH Green <b>International Journal of Chemical Kinetics</b> 53 (1), 27-42</p>
<p><i>Catalyst ignition and extinction: A microkinetics-based bifurcation study of adiabatic reactors for oxidative coupling of methane</i> LA Vandewalle, I Lengyel, DH West, KM Van Geem, GB Marin <b>Chemical Engineering Science</b> 199, 635-651</p>
<p><i>Experimental and numerical study of a two-stage natural gas combustion pyrolysis reactor for acetylene production: The role of delayed mixing</i> L Chen, S Pannala, B Nair, I Lengyel, B Baek, C Wu, VM Retheesh, ... <b>Proceedings of the Combustion Institute</b> 37 (4), 5715-5722</p>
<p><i>Performance improvement for a fixed-bed reactor with layered loading catalysts of different catalytic properties for oxidative coupling of methane</i> W Liang, S Sarsani, D West, A Mamedov, I Lengyel, H Perez, J Lowrey <b>Catalysis Today</b> 299, 60-66</p>
<p><i>Numerical bifurcation analysis of large-scale detailed kinetics mechanisms</i> I Lengyel, DH West <b>Current Opinion in Chemical Engineering</b> 21, 41-47</p>
<p><i>Modeling study of high temperature pyrolysis of natural gas</i> S Gudiyella, ZJ Buras, TC Chu, I Lengyel, S Pannala, WH Green <b>Industrial &amp; Engineering Chemistry Research</b> 57 (22), 7404-7420</p>

## Patents:

<p><i>Scalable And Robust Burner/Combustor And Reactor Configuration</i> S Pannala, BKR Nair, PS Gautam, K Sankaranarayanan, D West, ... US Patent App. 16/302,699</p>
<p><i>Catalysts Prepared from Nanostructures of MnO<sub>2</sub> and WO<sub>3</sub> for Oxidative Coupling of Methane</i> W Liang, VSR Sarsani, D West, A Mamedov, J Lowrey, I Lengyel US Patent App. 15/770,957</p>
<p><i>Method for producing hydrocarbons by non-oxidative coupling of methane</i> DA Nagaki, Z Zhun, MNZ Myint, I Lengyel, A Mamedov, ... US Patent 9,902,665</p>
<p><i>Method for Producing Hydrocarbons by Oxidative Coupling of Methane with a Heavy Diluent</i> VSR Sarsani, D West, I Lengyel US Patent App. 15/241,244</p>
<p><i>Silver Promoted Catalysts for Oxidative Coupling of Methane</i> W Liang, VSR Sarsani, D West, H Perez, A Mamedov, I Lengyel, J Lowrey, ... US Patent 20,170,014,807</p>
<p><i>Method for Producing Hydrocarbons by Oxidative Coupling of Methane without Catalyst</i> A Mamedov, VSR Sarsani, I Lengyel, D West, , D West US Patent App. 15/180,957</p>
<p><i>Method of Producing Higher Value Hydrocarbons by Isothermal Oxidative Coupling of Methane</i> VSR Sarsani, D West, A Mamedov, W Liang, J Lowrey, I Lengyel, ... US Patent App. 15/180,955</p>
<p><i>Method for Producing Hydrocarbons by Non-Oxidative Coupling of Methane</i> DA Nagaki, Z Zhun, MNZ Myint, I Lengyel, A Mamedov, ... US Patent App. 15/179,478</p>
<p><i>Butadiene telomerization catalyst precursor preparation</i> HN Launay, JL Klinkenberg, JR Briggs, SE House, MC Van Engelen, ... US Patent App. 15/030,625</p>
<p><i>Brine purification</i> B Hook, D Tirtowidjojo, F Koester, SK Chaudhary, A Mehta, J Chauvel, ... US Patent 8,343,328</p>
<p><i>Process for producing low color glycols</i> ZI Stefanov, JP Chauvel, A Gonzalez, I Lengyel, , I Lengyel US Patent 8,293,949</p>
<p><i>Process for increasing the coalescence rate for amine-initiated polyethers</i> SK Chaudhary, JP Chauvel, CP Christenson, I Lengyel, JP Cosman, ... US Patent App. 13/001,628</p>
<p><i>Process for increasing the coalescence rate for amine-initiated polyethers</i> SK Chaudhary, JP Chauvel, CP Christenson, I Lengyel, JP Cosman, ... US Patent App. 13/001,628</p>
<p><i>Process for increasing the coalescence rate for amine-initiated polyethers</i> SK Chaudhary, JP Chauvel, CP Christenson, I Lengyel, JP Cosman, ... US Patent App. 13/001,628</p>
<p><i>Total organic carbon reduction in brine via chlorinolysis</i> SK Chaudhary, B Hook, CP Christenson, CJ Jean, D West, S Gluck, ... US Patent App. 12/670,142</p>

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<p><i>Modeling of turing structures in the chlorite—iodide—malonic acid—starch reaction system</i> I Lengyel, IR Epstein <b>Science</b> 251 (4994), 650-652</p>
<p><i>A chemical approach to designing Turing patterns in reaction-diffusion systems</i> I Lengyel, IR Epstein <b>Proceedings of the National Academy of Sciences</b> 89 (9), 3977-3979</p>
<p><i>Experimental and modeling study of oscillations in the chlorine dioxide-iodine-malonic acid reaction</i> I Lengyel, G Rabai, IR Epstein <b>Journal of the American Chemical Society</b> 112 (25), 9104-9110</p>
<p><i>Rate constants for reactions between iodine-and chlorine-containing species: a detailed mechanism of the chlorine dioxide/chlorite-iodide reaction</i> I Lengyel, J Li, K Kustin, IR Epstein <b>Journal of the American Chemical Society</b> 118 (15), 3708-3719</p>
<p><i>Systematic design of chemical oscillators. Part 65. Batch oscillation in the reaction of chlorine dioxide with iodine and malonic acid</i> I Lengyel, G Rabai, IR Epstein <b>Journal of the American Chemical Society</b> 112 (11), 4606-4607</p>
<p><i>Kinetics of iodine hydrolysis</i> I Lengyel, IR Epstein, K Kustin <b>Inorganic Chemistry</b> 32 (25), 5880-5882</p>
<p><i>Transient Turing structures in a gradient-free closed system</i> I Lengyel, S Kádár, IR Epstein <b>Science</b> 259 (5094), 493-495</p>
<p><i>Quasi-two-dimensional Turing patterns in an imposed gradient</i> I Lengyel, S Kádár, IR Epstein <b>Physical Review Letters</b> 69 (18), 2729</p>
<p><i>Computational chemistry predictions of reaction processes in organometallic vapor phase epitaxy</i> H Simka, BG Willis, I Lengyel, KF Jensen <b>Progress in Crystal Growth and Characterization of Materials</b> 35 (2-4), 117-149</p>
<p><i>New systems for pattern formation studies</i> IR Epstein, I Lengyel, S Kádár, M Kagan, M Yokoyama <b>Physica A: Statistical Mechanics and its Applications</b> 188 (1-3), 26-33</p>
<p><i>Diffusion-induced instability in chemically reacting systems: Steady-state multiplicity, oscillation, and chaos</i> I Lengyel, IR Epstein <b>Chaos: An Interdisciplinary Journal of Nonlinear Science</b> 1 (1), 69-76</p>
<p><i>Turing structures in simple chemical reactions</i> I Lengyel, IR Epstein <b>Accounts of Chemical Research</b> 26 (5), 235-240</p>
<p><i>A chemical mechanism for in situ boron doping during silicon chemical vapor deposition</i> I Lengyel, KF Jensen <b>Thin Solid Films</b> 365 (2), 231-241</p>
<p><i>Kinetics and mechanism of autocatalytic oxidation of formaldehyde by nitric acid</i> M Horváth, I Lengyel, G Bazsa <b>International Journal of Chemical Kinetics</b> 20 (9), 687-697</p>

*A computational study of gas-phase and surface reactions in deposition and etching of GaAs and AlAs in the presence of HCl*

C Cavallotti, I Lengyel, M Nemirovskaya, KF Jensen

**Journal of Crystal Growth** 268 (1-2), 76-95

*Systematic design of chemical oscillators. 82. Dynamical study of the chlorine dioxide-iodide open system oscillator*

I Lengyel, J Li, IR Epstein

**The Journal of Physical Chemistry** 96 (17), 7032-7037

*Systematic design of chemical oscillators. 72. A transition-metal oscillator: oscillatory oxidation of manganese (II) by periodate in a CSTR*

M Orban, I Lengyel, IR Epstein

**Journal of the American Chemical Society** 113 (6), 1978-1982

*Catalyst ignition and extinction: A microkinetics-based bifurcation study of adiabatic reactors for oxidative coupling of methane*

LA Vandewalle, I Lengyel, DH West, KM Van Geem, GB Marin

**Chemical Engineering Science** 199, 635-651

*Performance improvement for a fixed-bed reactor with layered loading catalysts of different catalytic properties for oxidative coupling of methane*

W Liang, S Sarsani, D West, A Mamedov, I Lengyel, H Perez, J Lowrey

**Catalysis Today** 299, 60-66

*Turing structures. Progress toward a room temperature, closed system*

IR Epstein, I Lengyel

**Physica D: Nonlinear Phenomena** 84 (1-2), 1-11

*Kinetic study of the autocatalytic nitric acid-bromide reaction and its reverse, the nitrous acid-bromine reaction*

I Lengyel, I Nagy, G Bazsa

**The Journal of Physical Chemistry** 93 (7), 2801-2807

*Modeling of transient Turing-type patterns in the closed chlorine dioxide-iodine-malonic acid-starch reaction system*

S Kadar, I Lengyel, IR Epstein

**The Journal of Physical Chemistry** 99 (12), 4054-4058