Supporting Information

Tuning Formate Surface Coverage with Cosolvents for Liquid-Phase Catalytic Transfer Hydrogenation

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Figure S1: Schematic of imaging cell assembly.



Figure S2: Short time MSDs and linear fits to determine the translational diffusion coefficients for particles exhibiting diffusive motion in pure water and a 20 mol% IPA cosolvent mixture.



Figure S3: Ethylphenol concentration profiles and initial reaction rate fits in water (dark blue circles), 10 mol% IPA (light blue triangles), and 20 mol% IPA (green squares).



Figure S4: Initial transfer hydrogenation reaction rates with potassium formate concentration ranging from 10 mM to 4 M in water (dark blue circles), 10 mol% IPA (light blue triangles), and 20 mol% IPA (green squares). Error bars represent standard error of the linear fits (Figure S3).



Figure S5. Apparent coverage data for formate onto Pd in water (blue)and in 20% IPA. The poor catalytic activity of Pd for the fuel decomposition reaction led to substantial experimental uncertainty for isotherm fits.



Figure S6: Linearized isotherms for formate adsorption onto Pd in water and 20% IPA



Figure S7: Linearized isotherms for formate adsorption onto Pt in water and 20% IPA.



Figure S8: Mean drift velocity of active particle in varying isopropanol cosolvent mole fraction.

Table S1:	Gas	Chromatography	ľ	Method	Parameters
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Autosampler	Agilent ALS G4513A; 10 µL syringe		
Sample tray temperature	Room temperature		
Syringe rinse solvent	Ethanol (200 proof, Decon Labs, Inc.)		
Syringe rinse cycles	7(6) 8 µL washes pre(post)-injection		
	2 sample washes; 6 sample pumps		
Injection volume	0.3 μL (split ratio 1:31.25)		
Inlet temperature	250 °C		
Column	Agilent HP-5 Capillary Column		
Column dimensions	30m×320µm×0.5µm		
Carrier gas	Helium (UHP, AirGas)		
Carrier gas inlet pressure (flow rate)	11 psi (2.38 mL/min)		
Carrier gas outlet pressure	0 psig (vent to atmosphere)		
Column holdup time	1.31 min		
Oven initial temperature	50 °C, hold 2 min		
Oven heating rate	30°C/min		
Oven final temperature	250°, hold 1.5 min		
Detector	FID, 50 Hz sampling rate		
Detector temperature	300 °C		
FID H_2 flow rate	35 mL/min		
FID Air flow rate	400 mL/min		
FID He makeup flow rate	25 mL/min		
Carrier gas flow correction	Constant makeup and fuel flow		
Methanol retention time	1.23 min		
Ethylphenol retention time	5.62 min		
4-vinylphenol retention time	5.88 min		