Oxidation of 2-Propanol and Cyclohexane by the Reagent 'Hydrogen Peroxide–Vanadate Anion–Pyrazine-2-carboxylic Acid': Kinetics and Mechanism[†]

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Supplement

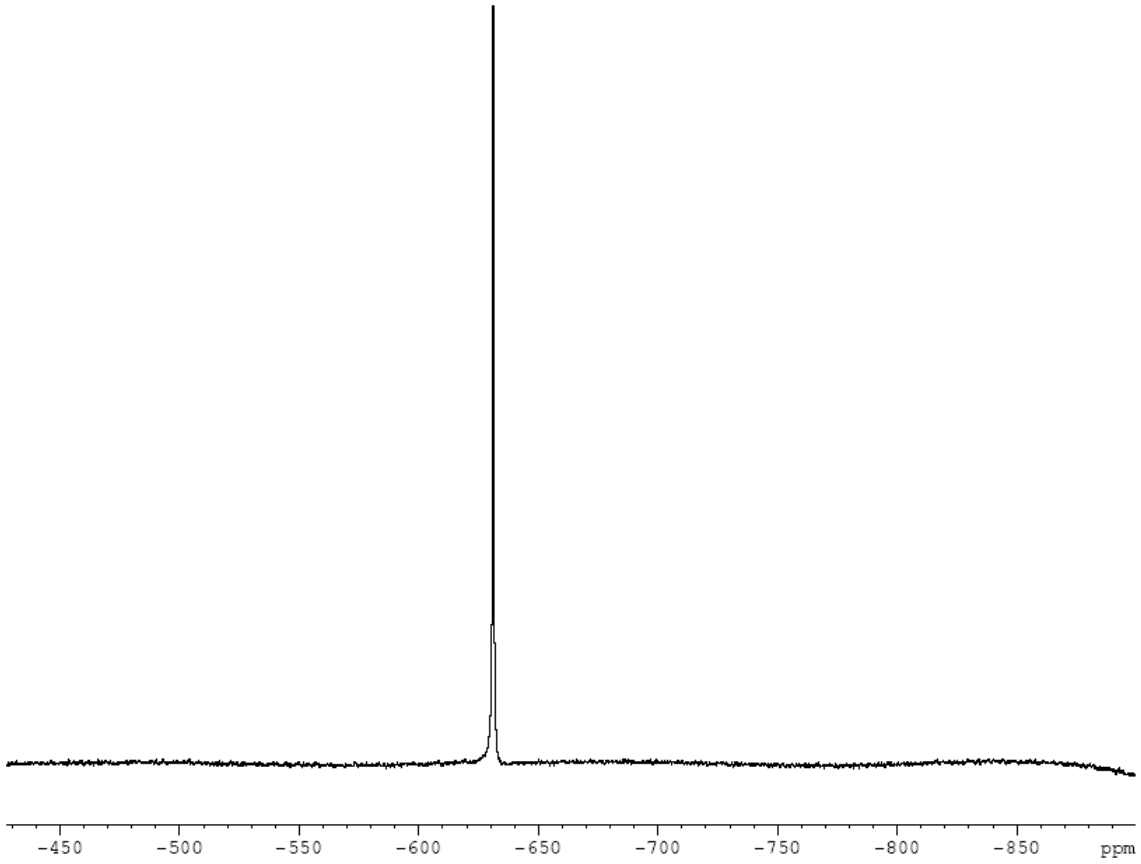

Figure S1. ^{51}V NMR spectrum of *n*-Bu_4NVO_3 (1 mM) in isopropanol containing 2.2 M H_2O after addition of 10 μl CF_3COOH.

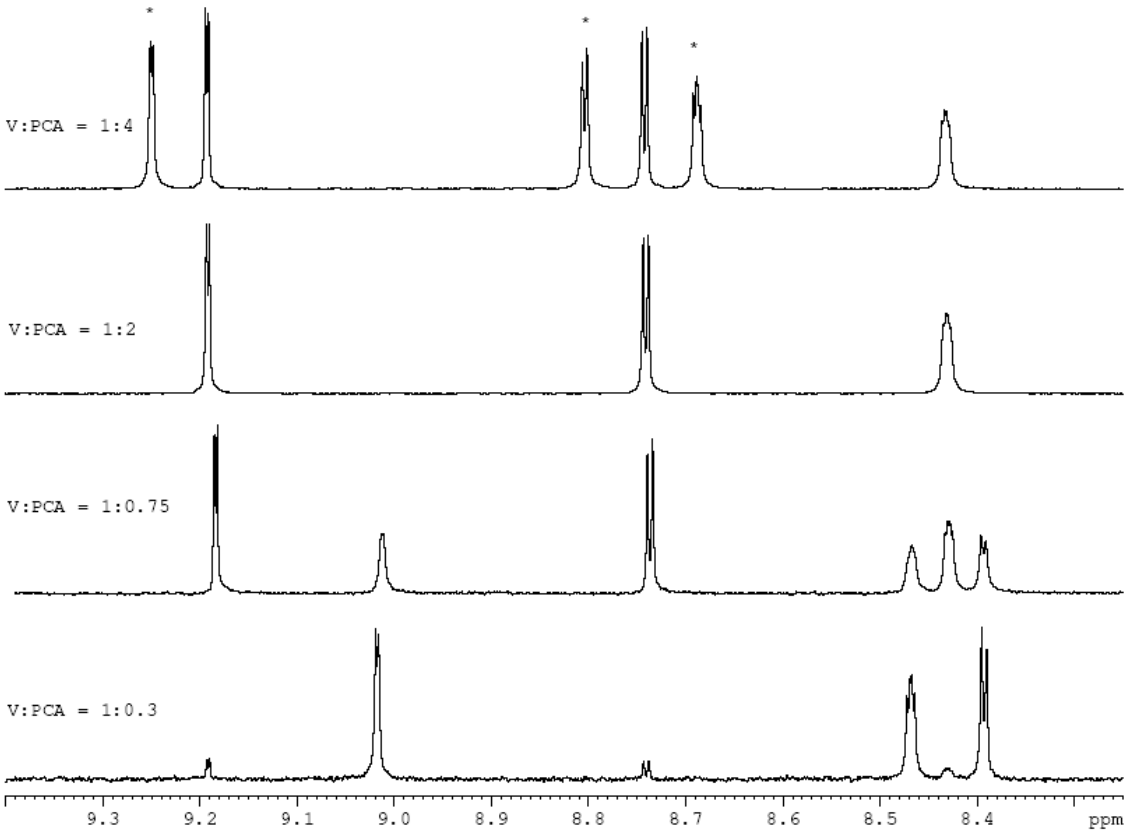

Figure S2. ^{1}H NMR spectra of *n*-Bu_4NVO_3 (1 mM) in CD_3CN at various PCA concentrations. Peaks indicated by asterisks are due to free PCA.

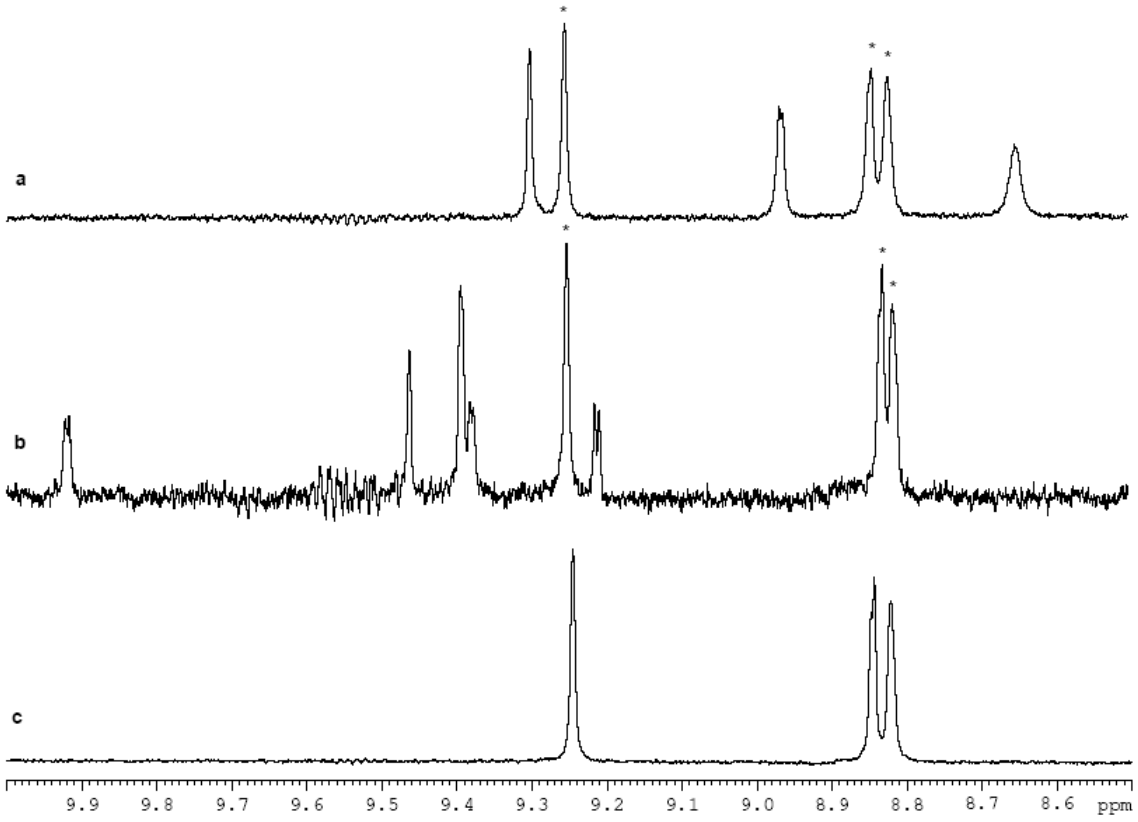

Figure S3. ^{1}H NMR spectra of (a) *n*-Bu_4NVO_3 (4 mM) + PCA (16 mM); (b) *n*-Bu_4NVO_3 (1 mM) + PCA (4 mM) + H_2O_2 (1 mM); (c) PCA (16 mM). Peaks indicated by asterisks are due to free PCA. All spectra were recorded in isopropanol containing 2.2 M H_2O.

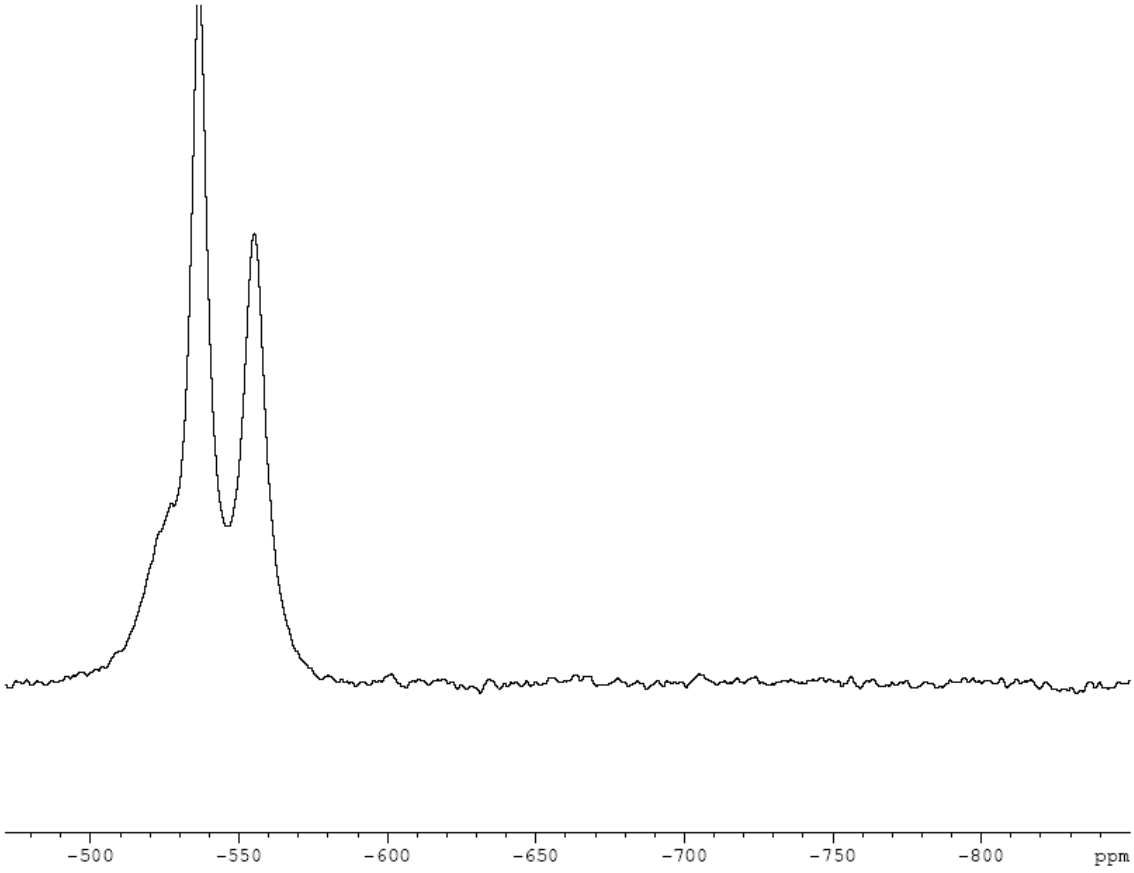

Figure S4. ^{51}V NMR spectrum of NH_4VO_3 (1 mM) + PCA (4 mM) in water.

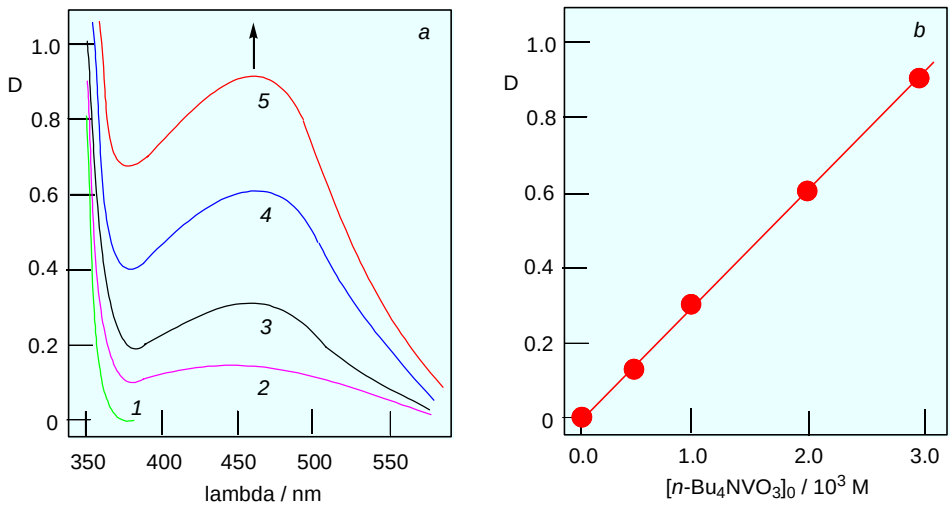

Figure S5. Electronic spectra of the solution of PCA (0.015 M) and H_2O_2 (0.50 M) in isopropanol containing water (2.2 M) at various concentrations of added *n*-Bu_4NVO_3: 0.0 (*1*), 0.0005 (*2*), 0.0010 (*3*), 0.0020 (*4*), 0.0030 (*5*) M (graph *a*). Components were mixed in a cuvette and after 2 min the spectra were taken (50 ^oC). Graph *b*: dependence of D_{457} on concentration of *n*-Bu_4NVO_3 derived form graph *a*.

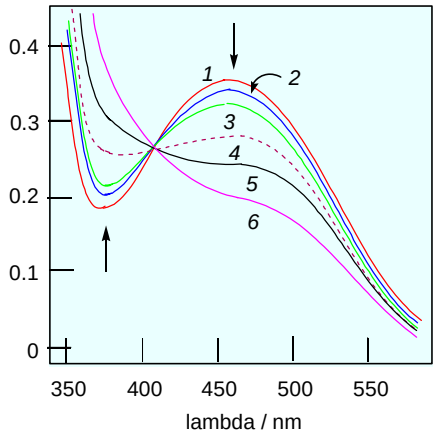

Figure S6. Electronic spectra of the solution of *n*-Bu_4NVO_3 (1 mM) and PCA (0.004 M) in isopropanol containing water (2.2 M) at various concentrations of added H_2O_2: 0.002 (*1*), 0.004 (*2*), 0.024 (*3*), 0.010 (*4*), 0.25 (*5*), 0.50 (*6*) M. Components were mixed in a cuvette and after 2 min the spectra were taken (50 ^oC).