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Relation between oxidation current of hydrogen gas and amount of the bubbles in aqueous solution

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"Actual" saturated concentration values of the hydrogen gas in water were obtained by using voltammetry and dynamic light scattering. The "actual" saturation means that hydrogen is hydrated up to the saturation without presence of dispersions of hydrogen gas bubbles. Cyclic voltammetry was done in aqueous solution to which hydrogen was bubbled. The concentration of the dissolved hydrogen was calculated from the oxidation current of the solution. The value was larger than the saturated concentration of the hydrogen referred from a chemical handbook. Invisibly small bubbles cannot be evacuated from the aqueous phase by the Brownian motion. Small bubbles kept on existing in water may supply hydrogen near the working electrode. The oxidation current of the hydrogen in the presence of bubbles was larger than that in the absence of the bubbles.
This conclusion was obtained from the following experiments.
The hydrogen gas was bubbled in aqueous solution at 1 atm for 15 min. Voltammetry was done in the aqueous solution without bubbling. The oxidation peak current of voltammogram was the diffusion-controlled from the variation with scan-rate. The concentration of hydrogen in aqueous solution was calculated from the oxidation current value. The value was 1.5 times larger than the bibliographic one (0.78 mM). The amount of the bubbles in water was measured by using a dynamic light scattering.