in braces, the products of the photoinduced reaction or of external current flow, is

Photoexcited dye oxidizes iron (II) to Fe^{III} (LHS), and power output is governed by a competition of the extent to which the reduced dye $\{\text{Dye}^-\}$ is oxidized at the junction by the Fe^{III} (RHS) (produced at the right by external current flow), against oxidation by Fe^{III} (LHS) (produced locally). The electrode-reaction rate will also in general be partly current determining, but here $\text{Fe}^{\text{III}} + \text{e}_{\text{Pt}} \rightleftharpoons \text{Fe}^{\text{II}}$ is fortunately fast; Pt foil 1 cm² was used. In a series of trials the maximum current output was obtained in the presence of KH_2PO_4 , 0.2 M, with 0.27 M FeSO_4 , 0.13 M H_2SO_4 and 2×10^{-3} M methylene blue. This solution was used for a detailed investigation of the cell's behaviour under load. The resistance across the cell was varied from 11 k Ω to 2 Ω and the potential V measured. A graph of $\log (V^{-1} - V_0^{-1})$, where V_0 is the extrapolated open circuit potential (e.m.f.) of 27.2 mV, against $\log R$, where R is the value of the external resistance, gives a notably straight line over the entire range of values (Fig. 1). This corresponds to an internal resistance in the cell of 3.1 k Ω , which with the e.m.f. of 27.2 mV gives a maximum usable power of 6×10^{-7} W. With no dye there was no photo-e.m.f., and thionine was found to be inferior to methylene blue. Magnetic stirring, and also the use of a rotating wire electrode, diminished the photocurrent.

Fig. 1 $\log [(V^{-1} - V_0^{-1})/\text{Volt}^{-1}]$ against $\log (R/\Omega)$ for performance under load R of the photogalvanic cell.

The power output compares favourably with the organic pn semiconductor values¹, 2×10^{-8} to 6×10^{-10} W. An illuminated Pt|S|KCNS(I) system has been found to give a similar output², and an illuminated TiO_2 semiconductor electrode is reported to give about 1 mA at 0.5 V (ref. 5), but both are in essence chemical-consuming galvanic cells that are photocatalysed; the latter is indeed potentially useful. Dye-containing photogalvanic cells clearly offer prospects of improvement for example in cell geometry (the H shape is markedly better than the same illuminatory and electrode configuration in a cylinder), in electro and photoactive species, electrolyte composition, and further parameters.

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Detection of RY Scuti at Radio Frequencies

IN Table 1 of a previous article¹ we gave the intensity of RY Scuti on February 21, 1973, 1400 UT as 102 ± 10 m.f.u. This should have read 204 ± 18 m.f.u. The statement that RY Scuti showed variability was intended to imply a possible variability of up to $\pm 25\%$, not of more than 50% as implied by the value printed.

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