

effects which may modify the  $S_1 - T$  electronic matrix elements. A good correlation between the cross sections and intermolecular potential well depths has been found [5].

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### K7

**The Photodissociation, with Pulsed Synchrotron Radiation, of  $H_2$  and  $D_2$  near 750 Å**

P. BORRELL

*Department of Chemistry, University of Keele, Staffordshire (U.K.)*

P. M. GUYON

*Laboratoire de Photophysique Moléculaire, Orsay (France)*

M. GLASS-MAUJEAN

*Laboratoire de Spectroscopie Herzienne de l'Ens Paris (France)*

Emission of the Balmer  $\alpha$ ,  $\beta$  and  $\gamma$  lines of atomic H and D were observed when  $H_2$  and  $D_2$  were irradiated below 750 Å with synchrotron radiation from the ACO storage ring at Orsay. The excitation spectra were recorded together with that from the Lyman  $\alpha$  emission below 850 Å and the lifetime of the  $\beta$  emission was measured by single photon counting.

The excitation spectra were structured and some of the peaks could be correlated

with the absorption spectrum in this region. The spectra indicate that the atoms are formed principally by predissociation from the initially excited Rydberg states in the region just above each energy threshold.

### L7

**Photochemistry of Ru(II) Complexes in Non-Aqueous Solvents**

G. B. PORTER and P. E. HOGGARD

*Department of Chemistry, University of British Columbia, Vancouver, B.C. V6T 1W5 (Canada)*

Tris(bipyridyl)ruthenium(II) is now frequently used as a sensitizer for transition metal complexes, both for luminescence and for photochemistry. However, in solvents less polar than water, it does undergo a photochemical reaction itself. Although this reaction has only a small quantum yield ( $10^{-3}$ ), it must still be taken into account in sensitization studies because the ruthenium complex has a very high extinction coefficient in the visible region and it is therefore used in quite low concentrations.

The reaction of the  $NCS^-$  salt in DMF leads to two products, one of which is the  $cis(Ru(bipy)_2(NCS)_2)$ , and the other is the  $cis(Ru(bipy)_2(NCS)(DMF))^+$ . The former is formed from an ion paired excited state with a quantum yield:

$$\Phi = \Phi_{ip} \frac{K_{ip}(NCS^-)}{1 + K_{ip}(NCS^-)}$$

with  $\Phi_{ip} = 1.4 \times 10^{-3}$  and  $K_{ip} = 55 \pm 10$ .

The second species is formed with a quantum yield of ca.  $3.2 \times 10^{-4}$ , independent of  $(NCS^-)$ . The photochemical reaction is quenched by  $O_2$  to the same extent as is phosphorescence, thus the phosphorescing triplet state is also directly involved in the photoreactions.

### O2

**Intramolecular Excimers**

W. KÜHNLE and K. ZACHARIASSE

*Max-Planck-Institut für biophysikalische Chemie, Göttingen (Germany)*

Formation of intramolecular excimers with molecules  $A-(CH_2)_n-A$  has in general been observed only for  $n = 3$ , e.g. for 1,3-diphenylpropane but not for 1,4-diphenylbutane (Hirayama [1]). The only