

5DFKHO &HDDV/RQI  
 )DFXOMQWBQD 7DNHPDWVX  
 )XQGH&REWUHOO  
 3KRWR SURSHLFWLPHLQQR DSKWKRO LQ LPLGD]ROLXP VD

3KRWRDFLGV DUH PROHFXOHV WKDW EHFRPH  
 PRUH DFLGLF XSRQ H[FLWDW  
 VWDWH SURWRQ WKUDQKDIYH E  
 XVHG LQ YDULRXV PDWHWLBG  
 GXH WR WKHLU DELOLW\ WR  
 FRQWUR70K\$ HQKDQFHG DFLG  
 KDV EHHQ DWWULEXWHG WR  
 UHGLEXXMLRQ LQ WKH H[FLWH  
 SKRWRDFLGLW\ FDQ EH HQK

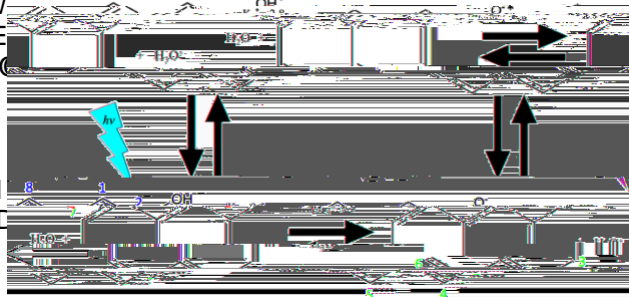


Figure 1. ESPT process of the photoacid 2OH in water. There is only one protic site 2OH. Thus, upon excitation, 2OH can either relax back to the ground state or deprotonate. The carbons of 2OH in the ground state is numbered according to naming conventions.

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WKDW KDV EHHQ VKRZQ WR XQ SDWKZD\ V DW HLUWZHUWVKKH G+  
 RQ WKH VROYHQW HQYLURQPHQW & RQVLGHULQ P HFKDQ LFKPD ULJHMLUHRGLXV  
 FKDUJHG VROYHQW VXFK DV LRQLF OLTXLGV ,/ FRXOG IXUWKHU LPSD  
 UH VSHFWARV DTSQRQVH@KQWDDYH LQG GVSOPHQJDEWHQDSV LVRQ SDQIGQH FLV\_ñ\_ñ

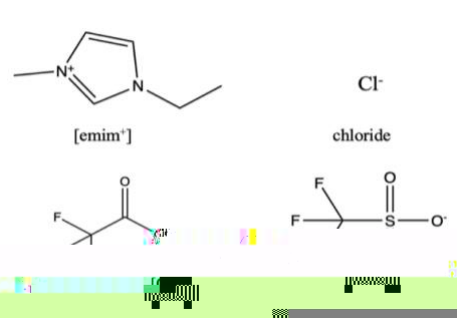
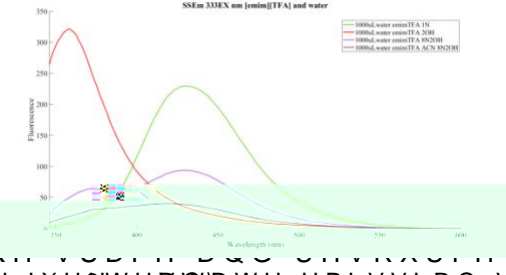


Figure 2. Proposed ions for ionic liquids; [emim]+[Cl]-, [TFA]-, and [OTf]-.

VROYHQWV VXFK DV ,/V 6WZDWHUWVWKUHV2+ LQ  
 UHYHDOVSGMLWVH (637 DV FDWLRQLF 1 2+ RQO  
 (637 DW WKH 2+ VLWH 7KH VWUXFWXUDO GHS  
 SKRWRFKHPLV WDW DPLQZHG XVLQJ WKH IROORZ

HWK\CHWK\OLPLGD]ROLXG>YDURLQJ DQLRQV  
 FRPELQDWLWOLVIXORURDFHDDWH >7)\$  
 WULIOXRURPHWKDQHVXGHRDQDQGLF 2/W)UXFWXU  
 LPSDFWHG ERWK WKH WDWXQFKBRIGV W[FLWHG I  
 DQG FRQWURQSSKRWRDFLGDZSKDQGDODPLQH 1  
 7KH HRHFKH DQLRQ RQ WKH JURXQG VWDWH F  
 DV SUHYLRXV UHVHDFK KDG RQO\ UHSRUWHG  
 7KH VSHFWUDO HYLGHQFH DOVR VWSSR-UWHG I

FRPSOH[ EHWZHHQ WKH SKRWRDFLG DQG DQLRQ  
 )XUWKHUIRROZDWHUJFRQWDP  
 FRQGXFWHRSXQV WDW VPDOO DPI  
 LPSDFW RQ H[FLWHG  
 SKRWRDFLG@>70\$>HPLZDV RQO\ DI  
 VLJQLILFDQW DPRXQV RI ZDWHU  
 REVHUYHG )XUWH ZRUN QGHFGWHV  
 UHJDUGLQJ ZDWHU ,/ PLWXUHV I  
 DQG RWKHU WDUJHW SKRWRDFLG  
 7KLV VXPPHU DOORZHG PH W  
 H[SORUH P\ DFDGHPLF LQWHUHV)LJXUWHWVWVH HPLVVLRQ VRU  
 JUDGDWH SURJUDPV 6LPLODUO SKRWRDFLGV LQ ,/ ZDWHU PLV PH  
 QXPHURXV OHVVRQV DQG KDV EHIYROXPH ZDV DGGHG \$ VHFRGLHQFH IRU  
 PH IRU 1 2+ ZDV REVHUYHG



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