

8OWUDIDVW HOHFWURQ VSLQ G\QD R2 FV
VRJHO WLKLPVI

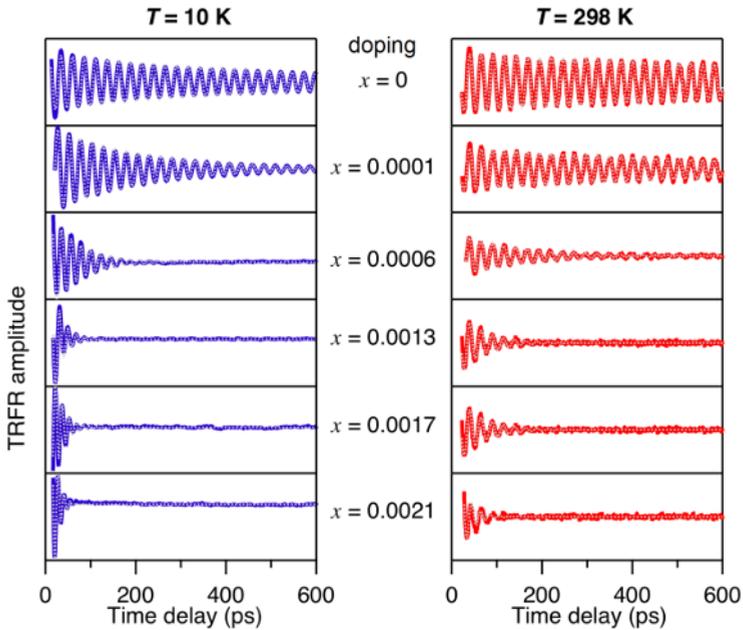
0 5DVNLQ :KLWDMHULOLDQ\H6D 7 2FKVHQEDH007H6WLHKP
0)RQL0 5•GL\$HVLHWHQVWRUDRFD0000 5 %UDWVFKLWVFK
,QVWLWXWH RI 3K\VLV &KHPQLW] 8QLYHUVLW\ RI 7HFKQR
'HSDUWPHQW RI &KHPLVWU\ 8QLYHUVLW\ RI :DVKLQJWRQ
'HSDUWPHQW RI 3K\VLV DQG &HQWHU IRU \$\$\$OLHG 3KRW

\$EVWU:DFWUREH WKH HOHFWURQ VSLQDQ R2 VRODPIH0 ILQDQ 2 D
ZLWK WLPH UHVROYHG)DUDGD\ URWDWLRQ QWKSIRWGRV FRIS
QDQRVHFRQGV DUH REVHUYHG DW URRP WHPSHUDWXUH
=Q&R2 WKH HIIHFWLY HDHFWREUWWRVCHVDZLGR QLFHOMDDWQ&R
SURYLGLQJ WKH P&BCHIEKDDGJHCHFWURQ H9

6HPLFRQGXFWRUV DUH ZHOO VXLWHG IRU XOWUDIDVW RS
PD\ EH XVHG WR LQWLWLDOL]H PDQLSXODWH DQG UHGD
IURP WKUHH WR]HUR GLPHQVLRQV 7KH ZLGH EDQGJDS
EDQGJDS RI H9 DQG DQ H[FLWRQ ELQGLQJ HGHUJ\ RI
EHQHILFLDO WR URRP WHPSHUDWXUH RSHUDWLRQ RI IXW
PD\ DOVR EH UHGDLO\ GRSG&RZLWV PDHFWLWHS IRVW DRUGI
WKH SDVW GHFDGH HYHU VLQFH UHSRUWV RI URRP WHP
DSSHU 5HPDUNDEO\ WKHH PDHFWLWRQGH H[RIKDWKHW &RPHUJ
PHDVXUHG IRU WKLV GLOXWHG PDJQHWLF VHPLFRQGXFWRU
:H XVH WLPH UHVROYHG)DUDGD\ URWDWLRQ 75)5 VSHF
WKH WUDQVLHQW HOHFWURQ VSLQ G\QD R2 FV W R Q FKH PILIOP
)LJXUH VKRZV 75)5 WUDFHV RI DQ XQGRSHG =Q2 VRO JHC
DQG URRP WHPSHUDWXUH DORQF QZLW KILVDFW FROQR
FRQFHQWUDWLRQV

6XUSULVLQJO\ 75)5 VLJQDOV QRW RQO\ SHUVLVW XS V
GHSKDVLQJLWEPHDVHV ZLWK ULVLQJ WHPSHUDWXUHV LQ
IRU HSLWD[LDO =Q2 ILOR&R26RORZHD VLEODRUI WQPSHUDWX
7KH FRQWUDVW ZLWK HSLWD[LDO7ILRCPHUXHGHVQW WKVWV
DULVHV IURP WKHLU JUDQXODULW\ +ROH WUDSV DW WKH
UHFRPELQDWLRQ DQG KHQFH DOORZ REVHUYDWLRQ RI H[
REVHUYHG WKLV HIIHFV LQ D SUHYLRXV VWXG\ RQ WKH XO
> @ DQG EHOLHYH WKDW WKLV PHFKDQLVP LV DOVR DFWLY
K\SRWKHVLV E\ SURELQJ WKH FDUULHU UHFRPELQDWLRQ
UHFRUGLQJ GLIIHUHQWLDO WUDQVPLVVLRQ DQG FRPSDULQ
75)5 PHDVXUHPHQWV

(3 - :HE RI & RQIHUHQFHV



)LJ 7LPH UHVROYHG)DUDGD\ URW\ DZLRRQF\ XUY HWK LRU I = QZ VD
 WHP SHUDWXUH RI 7 . OHIW DQG URRP WHP SHUDWXUH
 GLVSOD\HG DV GRWWHG OLQHV

:H QRZ WXUQ WR PDJQHWLFDOO\ GRWRGWH = QZ RQR DGG
 LQFUHDVH LQ WKH SUHDFQV LQFODUHQFHV)LJ 7K
 GHSHQG HQWLFH WR IRZQ LQ)LJXUH J, QHXRQG SHQH QD\ FRQ
 7 DQG J . ± [& QZ = KRZHYHU FUHDVHV ZLWK
 WHP SHUDWXUH DSSURDFKLQJ WKDW RI WKH XQGRSHG = QZ
 UHIOHFW WKH H[LVWHQFH RI H[FKDQJH FRXSOLQJ GRSHDZWH
 \$ JOREDO ILW RI WKH GDWD LQ & RLJXUH H[FKDQJH H[SRVWLQJ
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 VXJJHM.WHG H9 ZKLFK LV LQ JRRG DJUHHPHQW ZLWK RXU
 7KH VFRQG VWULNLQJ REVHUYDWLRQWLDK WKH H[SRVWLQJ
 VWURQJO\ DFFHOHUDWHG QVLRQWLDK WFRPH = QZ & ROPV :L
 7 GURSV IURP WR . STKH DFFHOHUDWHG GHSDVWLQJ
 LPSXULWLHV LV GXH WR ORFDO IOXFWXDWLRQV RI WKH
 IOXFWXDWLRQWLDK IURP PLFURVFRSLFDOO\ LQKRPRJHQHRXV
 LRQVHD EUHDNGRZQ RI WKH YLUWXDO FU\ VWDO DSSUR[LPH
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 D PRGHO EDVHG RQ WKHVH WZR HIIHFWV

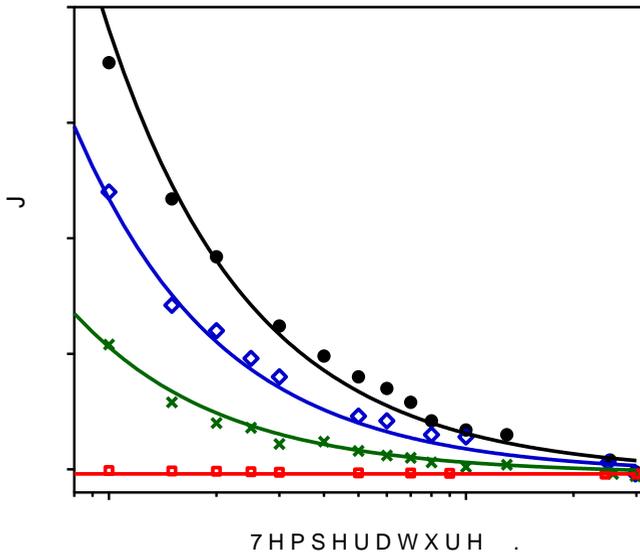


Fig. 2. 7HPSHUDWXUH GHS HQGHQBHLR 80KZLWKF WLYHLOOBWFL
RSHQ GLDPRQGV FURVVHV DQG XQG

,Q FRQFOXVLRQ ZH KDYH (SP) HSDUHG XLODBQB HQ RSW
JHQHUDWLRQ DQG GHWHFWLRQ XVLQJ UDSL EDURNOXWLSURF
DGYDQFH LQ WKH GHYHORSHPHQW RI IOH[LEOH ORZ FRVW
GLOXWHG PDJQHWLF VHPLFRQGXFWRUV LQWR XOWUDYLRO
DQG RSWR VSLQWURQLF GHYLFH V&R XFOVXUHQVILQ VERWKH
HOHFWURQ VSLQJHURKZVIRQJMLFDW HOHYDWHG WHPSHUDW
LV DWWULEXWHG WR LQKLELWLRQ RI FDUULHU UHFRPELQ
DQDO\VLV RI WKH HOHFWURQ DW HDIHF&RVERQWRIDWR RQ W
HOHF&RURQFKDQJH FRXSOLQJ (SR) DMBWBHQ QGHQ HUPLO
1. " H9

. 0 :KLWDNHU 0 5DVNLQ * .LOLDQL . %HKD 6 7 2
5•GLJHU \$ /HLWHQVWRUIHU ' 5 *DPHOLQ DQG 5 %UD
1 -DQ%HQ . 0 :KLWDNHU ' 5 *DPHOLQ DQG 5 %UDWV
7 7KRPD\ 7 +DQNH 0 7RPDV) 6RWLHU . %HKD 9
5 *DPHOLQ \$ /HLWHQVWRUIHU DQG 5 %UDWVFKLWVFK