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An extract from Photoconductivity Spectra

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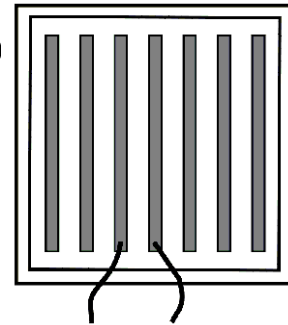
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Outline:

What is new in highly irradiated Si PC properties?

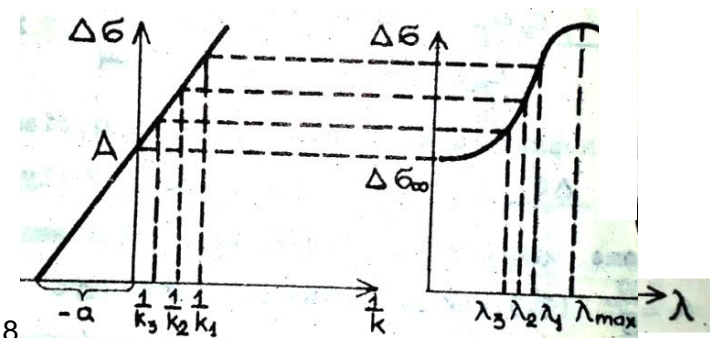
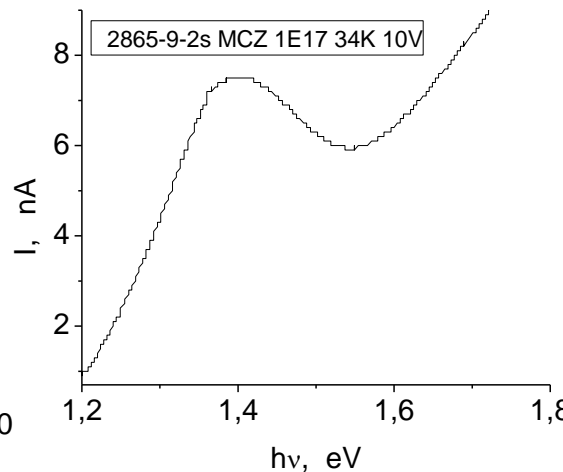
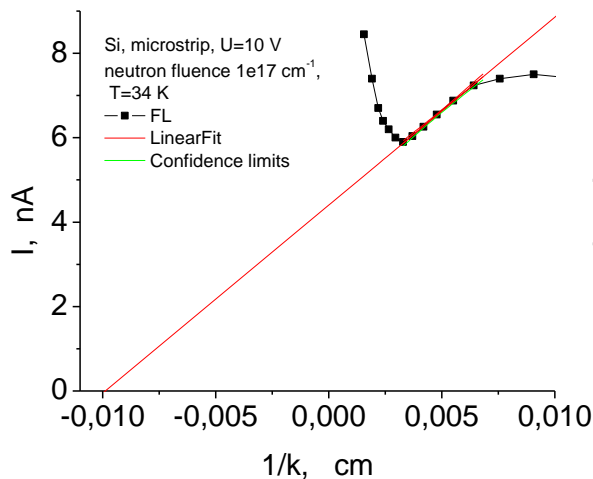
Photoconductivity Spectra

- The Photoconductivity Spectra in intrinsic excitation region (if to neglect the mobility change at the surface):
 - on ratio of recombination rates in bulk and surface,
 - on quantum yield.

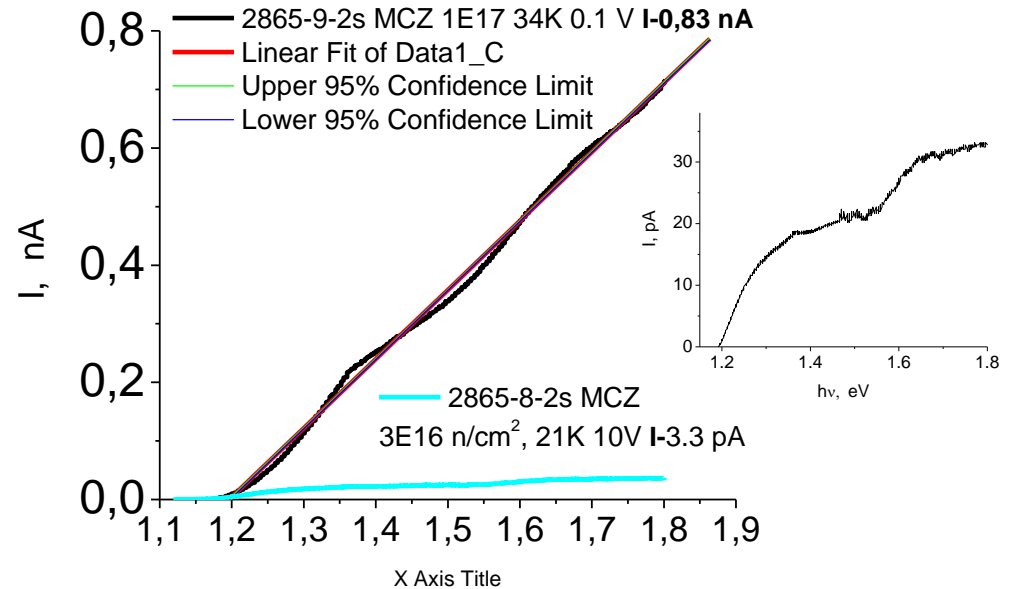
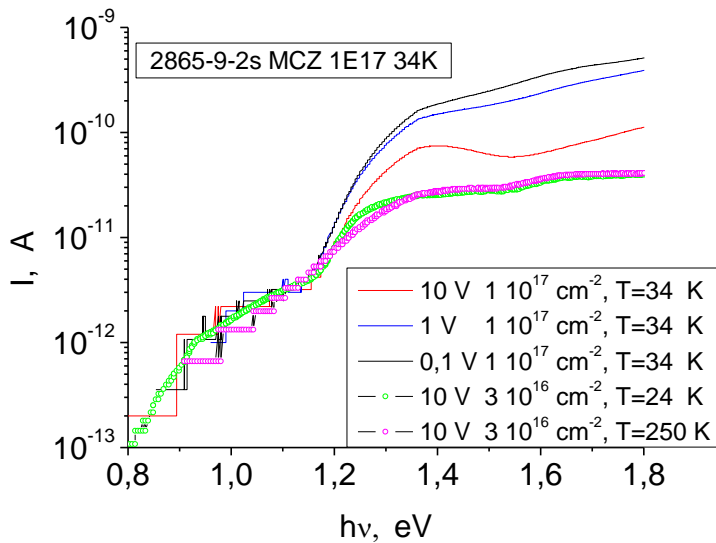
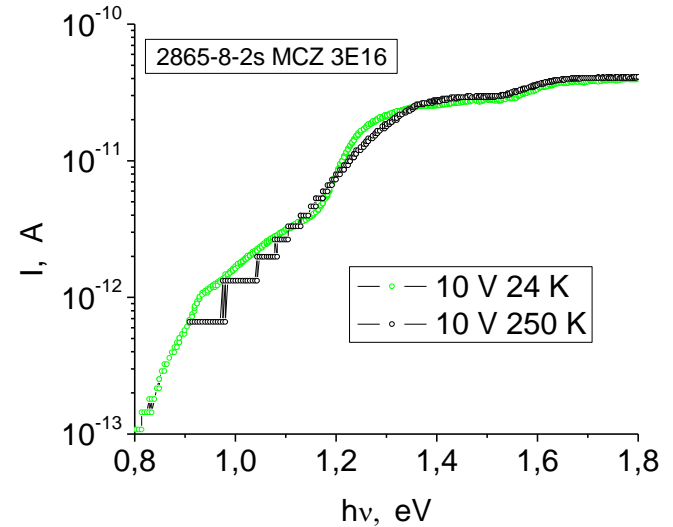
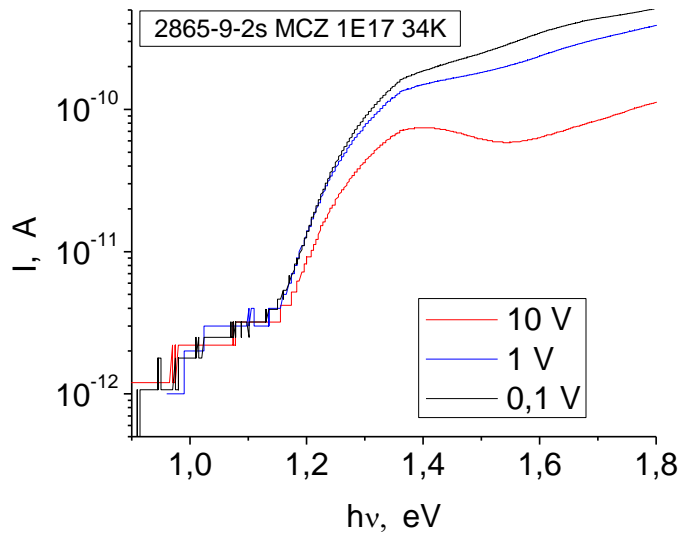


$l=43 \mu\text{m}$, $d \approx 300 \mu\text{m}$

- The classical model validity can be tested by photoconductivity dependence on inverse absorption coefficient.
- New effect: the quantum yield increase, that shows the impact ionization contribution which depended on photon energy.



Dependences on bias, fluence and T.





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Some conclusions:

- As the measurement was performed between microstrip contacts ($l=43 \mu\text{m}$, $d \approx 300 \mu\text{m}$), the increase of the surface recombination velocity could be related to change of space charge in Si oxide layer.
- The impact ionization well expressed in the samples irradiated to $1e17 \text{ n/cm}^2$ fluence.
- The lifetime weakly depends on temperature.

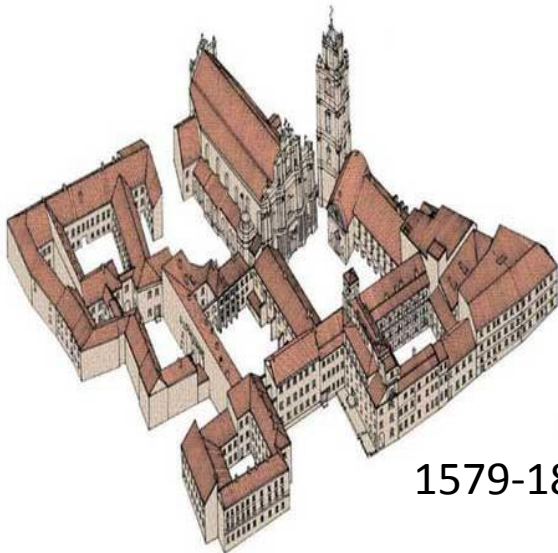


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THANK YOU FOR YOUR ATTENTION !



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