

# Device Simulation of a ZnO/CdS/CIGS/Mo Solar Cell using Medici

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## •Problem

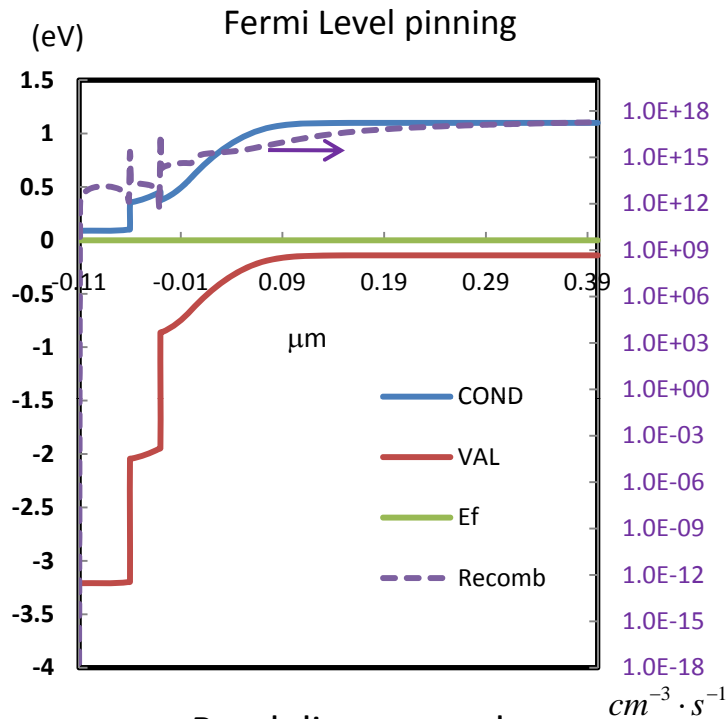
No consensus in the literature about the defect morphology of the surface of CIGS absorber layers

## •Approach

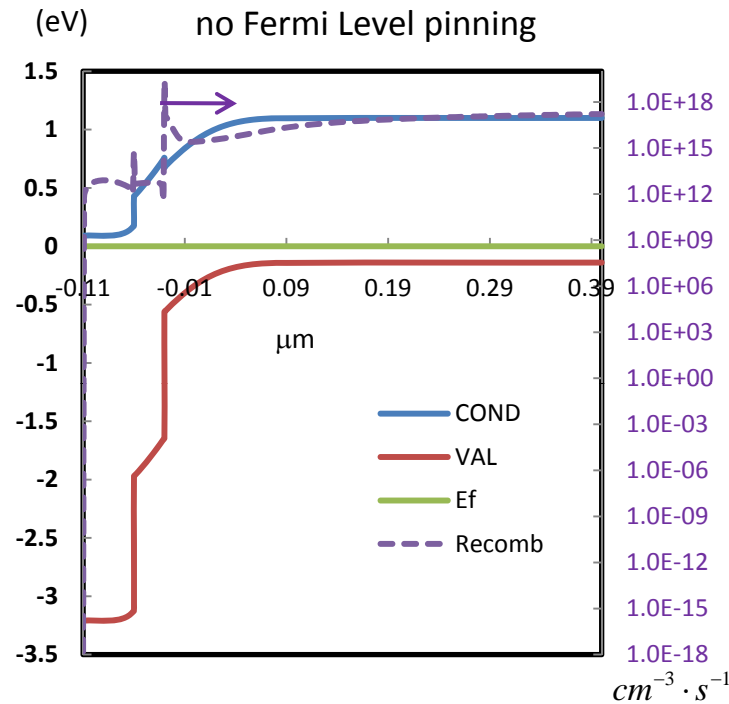
Different defect scenarios have been simulated and will be presented with a focus on Fermi level pinning, carrier recombination rates, current-voltage characteristics and cell efficiency.



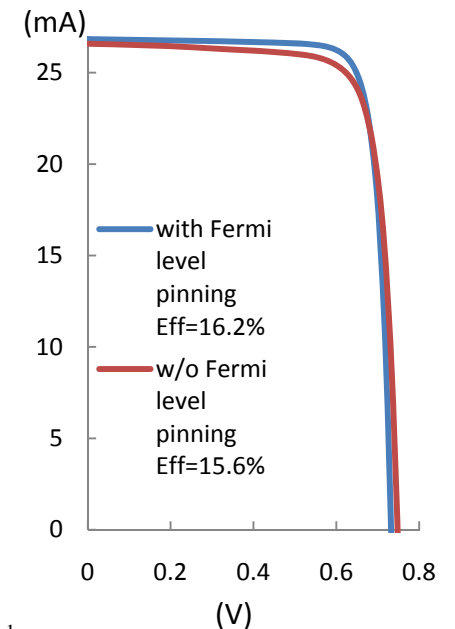
# Energy band diagrams and cell characteristics



Band diagram and recombination rate



Band diagram and recombination rate



I-V characteristics and efficiency

With Fermi level pinning

- **recombination rate** in CdS/CIGS interface lowered to  $2.83 \times 10^{16} / cm^3 \cdot s$
- **power conversion efficiency** raised up to **16.2%** at AM1.5