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| Start-end date: 24-08-2023 26-01-2024                  |  | <br><br> |
| Student name: Francesca Figaroli                       |  |  |
| Course: ESSET- Avans                                   |  |  |
| Internship Department/Company: GPQM-UFSJ               |  |  |
| Brazilian Professor/Supervisor: Marco Antonio Schiavon |  |  |
| Dutch Professor/Supervisor: Bruno Bastos Sales         |  |  |
| Third Generation of Quantum Dots Solar Cells           |  |  |

### Problem/assignment

*The main focus of this internship project was to build different types of quantum dots solar cells, based on different quantum dots (CIS and CISZ), and different assembly methods and analyze which type had the best results in efficiency, lifetime, and stability.*

### Used methods/project phases

*The project was developed completely in the laboratory where together with other colleagues it was possible, after many attempts, to develop the right method of synthesis to create quantum dots. After this, the second part of the project could be developed, as is to say the assembly of the cell, a process of five days. On the last day analyses were done to collect data. The process was repeated as many times as possible to have a high accuracy. In the meanwhile, a financial and environmental analysis was also carried out and all the aspects and results were collected and explained in the Final Report.*

### Results

*The results of the project showed that between the two types of cells built the one with CISZ quantum dots showed the highest efficiency reaching 2,85%, analysis regarding stability showed good results in all the different cells built and a short lifetime. The financial analysis showed that still, a lot still has to be done to lower the cost of production of this cell but that already between two methods of assembly one was half of the price. Regarding the environmental analysis results showed that the focus for the next research should be the development of ways to recycle the materials used.*

### Extra info/advice/link to final document and presentation

<https://prezi.com/view/aSL5WDPtrHWEy2OSXUw6/> Prezi link Final presentation

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[https://www.canva.com/design/DAF2h2NjvSI/8v2hulRyK5qrCIRS44FVyw/edit?utm\\_content=DAF2h2NjvSI&utm\\_campaign=designshare&utm\\_medium=link2&utm\\_source=sharebutton](https://www.canva.com/design/DAF2h2NjvSI/8v2hulRyK5qrCIRS44FVyw/edit?utm_content=DAF2h2NjvSI&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton)

Elevator pitch link

<https://ufs.br/gpqm/> University webpage of the Research group GPQM

Collaborators: Thais Adriany de Souza Carvalho, Leticia Ferreira Magalhaes.