

### Optimization of Dye Adsorption Condition in DSSC

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Dye-sensitized solar cells is the photoelectrochemical cell using the principle of photosynthesis, which is composed of conductive metal oxide, dye, electrolyte, counter electrode. DSCs have been expected to be a potential candidate of the next-generation solar cells having the advantages of low production cost, transparency, various color, flexibility and low sensitivity about an angle of incidence light. Recently, many companies and laboratory try to commercialize of DSCs. However, there are few problems in commercialization. One of them, the process of dye adsorption takes about 12~24h. This part takes a long time in manufacturing process of DSCs. In order to improve productivity, we need to minimize the adsorption time. For efficient adsorption, we carried out experiments to find proper adsorption temperature and stirring speed. The optimized adsorption temperature and stirring speed provide higher activation energy to dye adsorption process. In this research, we have compared to the performance of DSCs (unit cell) according to different adsorption time and stirring speed. We also analyzed the amount of dyes on TiO<sub>2</sub> surface by dye desorption experiment. Finally, we have achieved the proper dye adsorption conditions for commercialization of DSCs.