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## Exceptionally Crystalline TiO<sub>2</sub> Mesocrystals with Enhanced Light Harvesting Characteristics for solar energy conversion

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**Abstract content** <br> &nbsp;<br> (Max 300 words)<br><a href="http://events.saip.org.za/getFile.py/?target="\_blank">Formatting &<br>Special chars</a>

Titanium dioxide (TiO<sub>2</sub>) is one of the most abundant compounds in our planet. It is cheap, non-toxic, highly chemically and thermally stable semiconductor material. Titanium dioxide nanoparticles (TiO<sub>2</sub>-NPs) show high visible light transparency combined with high UV light absorption. However, altering the particle size and crystalline structure of TiO<sub>2</sub>-NPs influences the absorption range, adsorption of dye molecules and electron transfer rate at the surface. Unfortunately, TiO<sub>2</sub>-NPs suffer high electron/hole recombination rates. Therefore, an ordered superstructure consisting of nanoparticles on the scale of nanometers to several micrometers is proposed; titanium dioxide mesocrystals (TiO<sub>2</sub>-MCs).

In this work, we represent a new and facile way to fabricate TiO<sub>2</sub>-MCs with spherical structure by sol-gel method

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**Main supervisor (name and email)**<br>**and his / her institution**

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yes

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yes

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