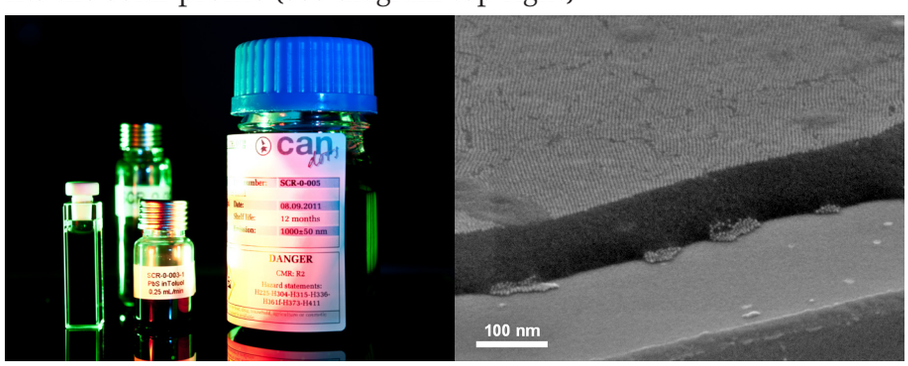
Center for Applied Nanotechnology

can dot in Photovoltaics

CAN GmbH has applied its expertise in nanoparticle synthesis and ligand modification towards developing optimized particles for opto-electronic devices like our CANdot® Series C for solar cells.

CANdot® Series C particles feature a tunable absorption edge depending on their size so that the particles' absorption spectrum fits the solar profile (see diagram top right).



A patent pending continuous flow process allows production of even larger amounts of these nanoparticles at a much lower cost then ever before. In addition, this procedure ensures a high reproducibility of all particle properties at every production volume, resulting in a higher quality product when compared to material resulting from batch syntheses.

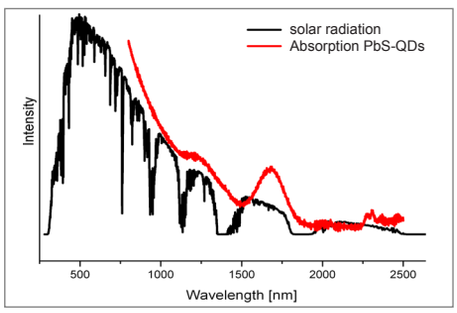
Featuring narrow size distribution, our particles are highly suitable for preparation of thin films consisting of defined monolayers by various coating techniques.

For best performance of these semiconductor nanoparticles as absorber material in solar cells modifications can be done to optimize processability and performance on the device. Thus, CAN GmbH offers further customization steps beyond the standard product to add extra value to your application. Please contact us for details.

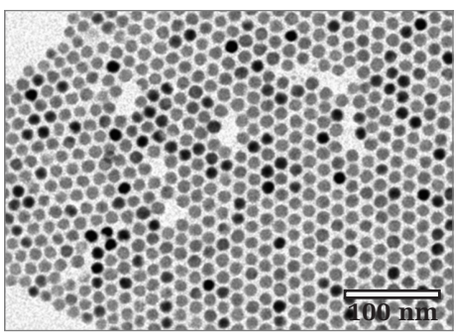
An additional system with absorption in the visible are our core particles from CANdot® Series A. They can be an ideal candidate for niche applications or easy quality control, such as e. g. in film preparation.

CANdot® Series A	
Material	semiconductor nanoparticles (CdSe-based)
Dispersibility	organic solvents (usually hexanes)
Absorption edge	505 to 605 nm (2.1 to 2.6 eV)
Emission wavelength	530 to 620 nm (2.1 to 2.5 eV)

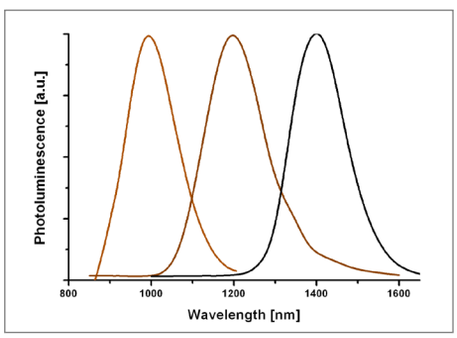
CANdot® Series C	
Material	semiconductor nanoparticles (PbS-based)
Dispersibility	organic solvents (usually toluene)
Absorption edge	850 to 1570 nm (0.8 to 1.5 eV)
Emission wavelength	1000 to 1600 nm (0.8 to 1.2 eV)



Comparison of solar radiation and absorption spectrum of CANdot® Series C (sketch)



TEM image of CANdot® Series C particles



Emission spectra of CANdot® Series C QDs with a maximum at 1000, 1200 and 1400 nm

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