

Optical and photocatalytic properties of zinc oxide quantum dots - data and code to reproduce the paper: "Ahmed & Edvinsson. J. Phys. Chem. C 2020, 124 (11), 6395"

SND-ID: 2023-150. **Version:** 1. **DOI:** <https://doi.org/10.57804/d33y-r007>

Download data

preprint-repro-jpcc2020-public.zip (92.36 MB)

Associated documentation

README.pdf (282.4 KB)

Download all files

2023-150-1.zip (~92.63 MB)

Citation

Ahmed, T., & Edvinsson, T. (2023) Optical and photocatalytic properties of zinc oxide quantum dots - data and code to reproduce the paper: "Ahmed & Edvinsson. J. Phys. Chem. C 2020, 124 (11), 6395" (Version 1) [Data set]. Uppsala University. Available at: <https://doi.org/10.57804/d33y-r007>

Creator/Principal investigator(s)

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Description

In the article (Ahmed & Edvinsson, J. Phys. Chem. C, 2020) we have investigated the optical, electronic, and photocatalytic properties of ZnO quantum dots in aqueous-based suspensions under AM1.5G solar irradiation. With the addition of an organic dye to the suspension we could spectrometrically probe how the changing diameter of the quantum dots affected their redox properties.

This dataset consists mainly of time series of UV-Vis spectra experimentally recorded in-situ during illumination of the ZnO photocatalyst using a bench-top fibre-optic spectrophotometer, and of derived properties such as optical absorption coefficients and peak fit parameters.

This dataset includes all the raw data and all digital resources (images, references, etc.) necessary to reproduce the article in preprint form. It also includes all code (R language) used to ingest, manipulate, plot and tabulate the data in what is called an Rnoweb document.

Rnoweb is a type of literate programming document, where the manuscript text (LaTeX) can be interspersed with code in the same file. For the sake of readability (as well as writeability) we have

split the manuscript into multiple Rnoweb source files, all linked from a single parent: 000-paper.Rnw.

Please note that the compressed archive (zip) here lacks git versioning metadata, which is included if you instead clone this dataset from the linked GitHub or Codeberg repositories. The zip-file here corresponds to the v1.0.0 release (i.e., commit 11de097154).

Data contains personal data

No

Language

[English](#)

Data format / data structure

[Numeric](#)

[Text](#)

[Software](#)

[Other](#)

Data collection 1

- Mode of collection: Laboratory experiment
- Description of the mode of collection: UV-Vis optical absorbance spectroscopy
- Data collector: Uppsala University
- Source of the data: Other

Funding

- Funding agency: Swedish Research Council for Environment Agricultural Sciences and Spatial Planning (Formas)
- Funding agency's reference number: 2016-00908_Formas
- Project name on the application: Soldriven vattenrening med lågdimensionella fotokatalysatorer

Research area

[Materials chemistry](#) (Standard för svensk indelning av forskningsämnen 2011)

[Inorganic chemistry](#) (Standard för svensk indelning av forskningsämnen 2011)

[Condensed matter physics](#) (Standard för svensk indelning av forskningsämnen 2011)

[Physical chemistry](#) (Standard för svensk indelning av forskningsämnen 2011)

Keywords

[Photocatalysis](#), [Metal oxide semiconductors](#), [Optical absorption](#), [Quantum dots](#)

Publications

Ahmed, T. & Edvinsson, T. (2020). Optical Quantum Confinement in Ultrasmall ZnO and the Effect of Size on Their Photocatalytic Activity. The Journal of Physical Chemistry C, 124, 11, 6395–6404.

DOI: <https://doi.org/10.1021/acs.jpcc.9b11229>

URN: <urn:nbn:se:uu:diva-410900>

SwePub: <oai:DiVA.org:uu-410900>

Accessibility level

Access to data through SND
Data are freely accessible

Use of data

[Things to consider when using data shared through SND](#)

License

[CC BY 4.0](#)

Versions

Version 1. 2023-10-16

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