

RCSB.org

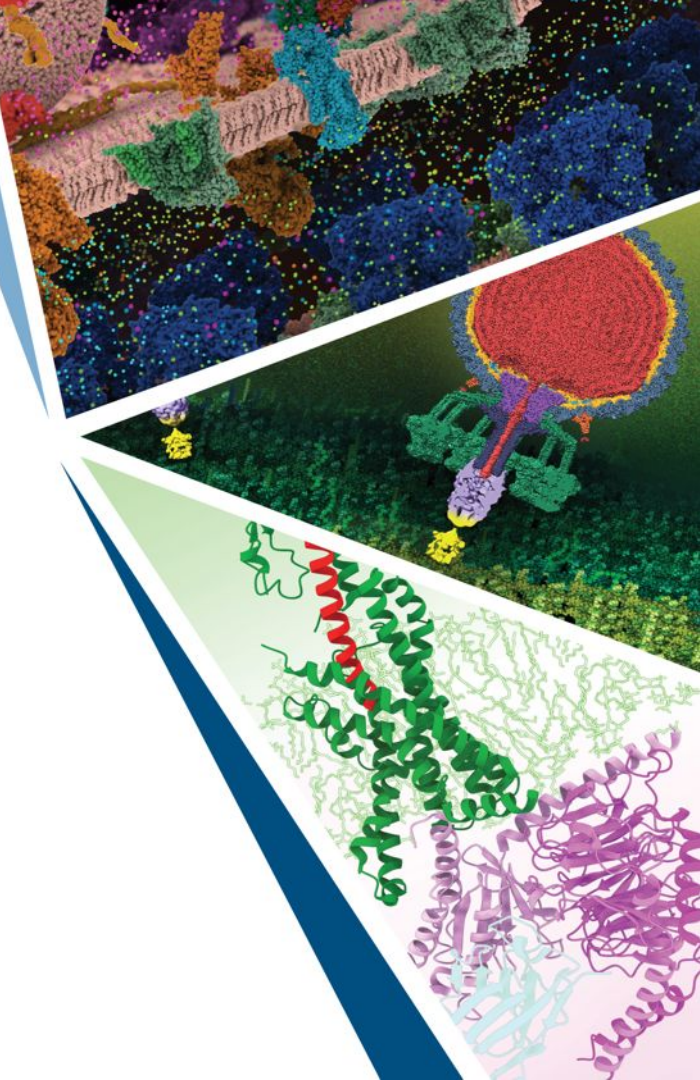
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Structure Factors, Map Coefficients, and RCSB.org

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EDMAPS.rcsb.org Shutdown

In fall of 2024, electron density map coefficients will be available in the public PDB archive for all X-ray structures. These map coefficients will be the same as used in wwPDB Validation Reports.

The new map coefficients files will replace the electron density maps and combined map coefficient files distributed by RCSB PDB and used by the NGLviewer at RCSB.org. These data (currently served by EDMAPS.rcsb.org) are calculated using publicly-available coordinate files and structure factor files and offered in DSN6 formatted map files and MTZ formatted map coefficient files. RCSB PDB plans to shutdown the NGL viewer by July 2024 ([announcement](#)) and will no longer need the data served by EDMAPS.rcsb.org.

RCSB PDB will be phasing out EDMAPS.rcsb.org:

- June 28, 2024: DSN6-formatted map files will no longer be provided. EDMAPS.rcsb.org will only serve MTZ files with map coefficients.
- Fall 2024: Electron density map coefficients will be available in the public PDB archive for all X-ray structures. At this point, EDMAPS.rcsb.org will be shut down, including access to MTZ files with map coefficients from this service.

Format of PDBx/mmCIF formatted files

Standard SF:

loop_
_refln.crystal_id
_refln.wavelength_id
_refln.scale_group_code
_refln.index_h
_refln.index_k
_refln.index_l
_refln.status
_refln.F_meas_au
_refln.F_meas_sigma_au
.....

Validation SF:

Fo-Fc
loop_
_refln.index_h
_refln.index_k
_refln.index_l
_refln.pdbx_DELFWT
_refln.pdbx_DELPHWT
_refln.fom

2Fo-Fc: (index/fom same)

_refln.pdbx_FWT
_refln.pdbx_PHWT

Tools for conversion options

cif2mtz (CCP4)

sf_convert (only SF conversion)

gemmi (general purpose conversion/manipulation)

For sf_convert and gemmi, can use python virtual environment

```
python3 -m venv venv3
```

```
source venv3/bin/activate (or activate.csh)
```

```
pip install gemmi-progs sf_convert
```

```
gemmi or sf_convert
```

Downloading Files

<https://www.rcsb.org/docs/programmatic-access/file-download-services>

<https://files.rcsb.org/download/1o08-sf.cif>

https://files.rcsb.org/pub/pdb/validation_reports/o0/1o08/1o08_validation_2fo-fc_map_coef.cif.gz

https://files.rcsb.org/pub/pdb/validation_reports/o0/1o08/1o08_validation_fo-fc_map_coef.cif.gz

Converting PDBx/mmCIF to MTZ

- Phenix programs can usually use PDBx/mmCIF directly
- Other options:
- Cif2mtz (CCP4)
- Sf_convert:
 - `sf_convert -o mtz -sf 1o08-sf.cif -out 1o08-sf.mtz`
- Gemmi
 - `gemmi cif2mtz 1o08-sf.cif 1o08-sf.mtz`
 - Gemmi allows more customization with a spec file
 - `gemmi cif2mtz --print-spec > spec` (if needed)
 - `gemmi cif2mtz 1o08_validation_2fo-fc_map_coef.cif.gz --add 1o08_validation_fo-fc_map_coef.cif.gz mapcoef.mtz`
 - ^-- could also add 1o08-sf.cif if would like F's included

Converting MTZ map coefficients to CCP4 map

- fft (CCP4)
- sftools (CCP4) FFT command followed by mapout
- phenix.maps (Phenix)
- gemmi sf2map (gemmi) Can handle PDBx/mmCIF or MTZ

Conversion of CCP4 maps to DSN6 format

- Coot, ChimeraX, pymol, can use CCP4 map files
- Coot can use MTZ map coefficient files
- xdlmapman (CCP4)
- sftools (CCP4)

Other resources....

PDBe based on legacy EDS service at Uppsala

<https://www.ebi.ac.uk/pdbe/entry-files/1o08.ccp4>