

Protocol for Converting cryoSPARC Particle Stack to RELION-Compatible Format

- **Create a RELION directory**, and inside it, create a subdirectory named after the cryoSPARC particle extraction job.

For example, if the cryoSPARC job is J354, create the directory structure:

```
/Relion_directory/J354/
```

- Inside the J354 directory, create another subdirectory named extract:

```
/Relion_directory/J354/extract/
```

- **Navigate to the extract directory**, and create symbolic links to the .mrc files from the cryoSPARC extraction job:

```
In -s /path/to/cryoSPARC/extract/job/*.mrc .
```

- **Rename all linked .mrc files to have .mrns extensions**, as required by RELION:

```
for file in $(ls); do mv "$file" "${file}s"; done
```

- **Load the required Conda environment:**

```
module load Miniconda3/py39_23.1.0
```

- **Check available Conda environments:**

```
conda env list
```

- **Activate the pyem environment:**

```
conda activate /panfs/hissoftware/rocky9/miniconda3/py39_23.1.0/envs/pyem
```

- Once activated, your command prompt will change to show (pyem) at the beginning, for example: (pyem) [sing1358@amd17]\$

- **Run the csparc2star.py conversion command:**

```
csparc2star.py \  
/path/to/cryoSPARC/job/particles.cs \  
/path/to/cryoSPARC/job/passthrough_particles.cs \  
/Relion_directory/cryosparc_CS-exp4-mrc_J161_007_particles.star \  
--boxsize 460
```

- **Open the generated STAR file for editing using Vim:**

```
vim cryosparc_CS-exp4-mrc_J161_007_particles.star
```

- **Within Vim, press Shift + : to bring up the command prompt and type the following substitution command:**

```
:%s/particles.mrc /particles.mrcs /g
```

- This command replaces all occurrences of particles.mrc with particles.mrcs .
- **Save and exit the file by typing:**

```
:wq
```