Tutorial 6: Generating *in-silico* microscopy image with different thickness of excitation

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The thickness of excitation is controlled by the third fload value of Lpsf parameter used in gen_mono. The PSF generated in Tutorial 1 is used.

1. Generate *in-silico* monochrome image data files

   The image data files is created for thickness of excitation of 1, 10, 20, 30, 40, and 50 nm. Since the PSF in Tutorial 1 was generated for a cuboidal box of $15 \times 15 \times 50$ nm^3, the maximum possible thickness of excitation is 50 nm. These image data files are generated with the command,

   ```
   term$ bash gen_Pn.sh
   ```

   The thickness of excitation is changed using a for loop and replace function of sed,

   ```
   for PN in 1 10 20 30 40 50
   do
        sed "s/Lpsf =.*/Lpsf = 15\.0 15\.0 ${PN}\.0/g" parameters.dat > foo.dat
        ../../gen_mono -f dp100.gro -p foo.dat -o Pn${PN}_img100
   done
   ```

   This creates files, Pn1_img100_lam518_fs800.dat, Pn1_img100_lam670_fs800.dat for thickness of excitation of 1 nm. Similar files were generated ofr 10, 20, 30, 40, and 50 nm.

2. Generate colored *in-silico* microscopy images

   The colored images are created with the command,

   ```
   term$ bash gen_Pn_png.sh
   ```

   The images can be created with the same "png_param.dat" using a for loop,

   ```
   for PN in 1 10 20 30 40 50
   do
         python ../../mono2color.py -f Pn${PN}_img -p png_param.dat -t 100
   done
   ```

Images with different thickness of excitation $P_{n'}$: 1 nm (top, left), 10 nm (top, middle), 20 nm (top, right), 30 nm (bottom, left), 40 nm (bottom, middle), 50 nm (bottom, right).