# Querying the generated data

## Data storage location

The data generation for Semiconductor LEDs is only partly completed. The present status of completion is as given below:

For Ag, all the combinations of data have been generated and the data is stored in Hard Disk 1in ‘.csv.gz’ format.

For Au, all the combinations till semiconductor refractive index value of 4.0 has been generated. Out of this, till refractive index value of 3.4 is stored in Hard Disk 1 and the rest in Hard Disk 2. At the time of preparation of this documentation, data generation for refractive index value 4.3 is going on.

For TiN, data generation was started parallelly, and is going on for refractive index value of 2.5. The data generated is stored in Hard Disk 2.

For all the rest of combinations and other materials, the data is yet to be generated.

## Demystifying the directory structure and naming of files

A python-based tool, with web-based UI has been developed using the ‘Streamlit’ library for querying into the generated dataset.

It is important to note here that the naming convention has been modified from Au (4.3) and TiN (2.5). The reason being that each CSV file generated before this is of the order of 12 GB before compression and around 2 GB post compression. Each file consists of all the combinations for a particular value of height, semiconductor refractive index and NP material.

The directory structure was, “‘name of material ’\_’value of semiconductor refractive index’/TRS\_’height’.csv.gz”.

For example, say for Silver NP material and semiconductor refractive index of 2.5, and for NP layer at a height of 10 nm above the LED semiconductor, the directory will be,

‘Au\_n2.5/TRS\_10.csv.gz’

Inside of each such ‘.csv.gz’ files, there are transmittance and reflectance values for all combinations of radius, gap and wavelength, shape, encapsulating material.

The new naming convention makes separate file for each value of shape and encapsulating material, and each ‘.csv.gz’ file consists of values only for different combinations of radius, gap and wavelemgth. With this, every compressed file is now of the order of 500 MB.

An example of the naming for Au with refractive index 2.5, air encapsulant, shape of cubic-square and height of 10 nm will be ‘Au\_n2.5/ TRS\_h10\_n1\_sh0.csv.gz’.

## Using the napamegs tool

Based on the storage of source file, i.e. Param Ishan or Local, the tool itself follows the naming convention and shows the plot for the required data combination.