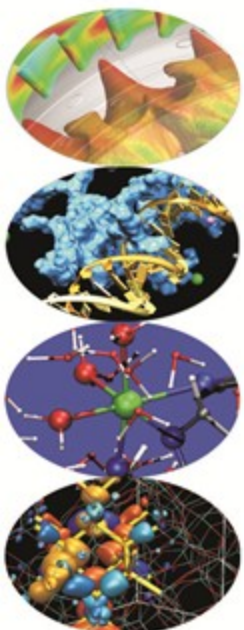


# CUDA hands on





# Ex 1

- 🔑 Analyze device properties of each device on the node by using `cudaGetDeviceProperties` function
- 🔑 Check the compute capability, global memory, shared memory, constant memory, num threads per block, num register per block.



## Ex 2

👉 Copy a buffer from host to device and check the transfer time.

```
cudaEvent_t start, end
cudaEventCreate(&start)
cudaEventCreate(&end)
CudaEventRecord(start,0)
Copies...
cudaEventRecord(end,0)
cudaEventSynchronize(end)
cudaEventElapsedTime(&eventTime, start,end)
```

Try more copies.

## Ex 3



- 1 Create an array of  $N$  integer elements on the device and initialize it on 0
- 2 Then copy the array device memory
- 3 Enlarge  $N$  until device memory is not enough and check the error message.



## Ex 4

- 👉 Create 3 arrays, a b, c of N elements on the host.
- 👉 Set a,b to some values
- 👉 Copy on the device
- 👉 Sum  $c[i] = a[i] + b[i]$ . Check the correct behaviour!!
- 👉 Copy back C
- 👉 Print, temporize C and check if values are expected  
(Be careful if N is not multiple of thread block size)