Dr. Refilwe Edwin Mapasha is a physics lecturer and also a member of the Theoretical & Computational Solid State Physics research group at the University of Pretoria. Mapasha obtained his undergraduate degree in 2007 at the University of Limpopo majored in BSc Physics and Applied mathematics. In 2008, he completed BSc honours (Physics) degree. Mapasha further pursued his postgraduate studies from the University of Pretoria where he obtained Msc (2010) and PhD (2013) in Computational Solid State Physics under the supervision of Professor Nithaya Chetty. Mapasha also completed his Post-doc program from the University of Pretoria (2016) under the same leadership of Professor Nithaya Chetty.

Professor Nithaya Chetty and Mapasha initiated a new project of studying defects in 2D material systems (h-BN and *graphane*). The study involved various charge states using the state-of-the-art density functional theory (DFT) methods investigating their thermodynamic stability, charge transition levels and electronic properties for electronic devices application. The work was published in high impact factor journals (please check Mapasha RE on researchgate and google scholars)

The group is interested on the following projects:

(1) Computational studies of Defects in two dimensional materials for electronic devices, energy storage applications and water splitting applications.

(2) Alloys in two dimensional materials for electronic devices, energy storage applications and water splitting applications.

(3) Deformation of the two dimensional materials for prediction of new novel materials.

The resources to conduct these projects are VASP and quantum esspresso software packages implementing state-of-the-art density functional theory (DFT) methods. Mapasha is currently supervising 2 Phd and 2 Msc students.