Optics and microscopy play a key role in modern natural science. X-rays with their short wavelengths and unique interaction with matter provide an unprecedented view into both artificial and natural nanoscale objects. While routine X-ray methods exist for the reconstruction of crystals, X-ray imaging of non-crystalline nanoscale objects is still a major challenge. In the talk, the current status of X-ray microscopy will be introduced and future developments will be presented. Furthermore, plans to strengthen the partnership between the Humboldt University and the Helmholtz Zentrum Berlin will be discussed.