Abstract: The Teichmüller space of an orientable surface of genus $g$ is a smooth cover of the moduli space of Riemann surface. Due to the uniformization theorem, one model of Teichmüller space is the deformation space of marked hyperbolic structures on the surface. Therefore, Teichmüller space embeds into the variety of representation of the fundamental group of the surface into $\text{PSL}(2, \mathbb{R})$. In recent year several higher Teichmüller spaces have been defined. These spaces are components of the variety of representations of the fundamental group of the surface into simple Lie groups $G$. Higher Teichmüller spaces resemble classical Teichmüller space in various ways, but many features of classical Teichmüller space are still unknown for higher Teichmüller spaces.