Materials based on Eu and Sr are prospective for spintronic and nanoelectronic applications. The formation of EuO films on Si substrates allows to unite the spintronic materials with silicon technology. The early attempts to form the EuO on Si wafers led to the formation amorphous layers, silicides or silicates at the Si/EuO interfaces. The presence of these layers may prevent the spin injection in Si. For the inactivation of Si substrate surface was proposed the usage of subatomic Eu film. With the help of Cs corrected high angle annular dark field (HAADF) scanning transmission electron microscopy (STEM) it was found the formation of two different surface super structural phases based on 2x1 and 5x1 [1]. Structure of these phases are presented in Fig.1a and Fig.1b (Arrows point at Eu atoms on Si surface). That method allow us to create abrupt EuO/(001) Si interface as shown in Fig. 1c and Fig. 1d. STEM and electron diffraction, used for the investigation demonstrated that EuO film adopted Fm-3m space group with lattice constant a=5.14 Å. With the help of electron energy loss spectroscopy (EELS) was shown that Eu in the film exhibited +2 oxidation state [2].

New silicide phases, such as EuSi \(_2\) and SrSi \(_2\) were found [3]. They exhibited trigonal (S.G. P-3m1) space group and silicene like structure. The lattice parameters were: SrSi\(_2\) – a=3,97 Å, c=5,13 Å and EuSi\(_2\) – a=3,90 Å, c=4,92 Å.