Self-assembled organic molecules promise a wide range of applications in many fields such as organic chemistry, nanotechnology or molecular electronics. The goal of this thesis is to create covalent bonds in self-assembled structures that could be later used in the field of 2D superconductors. To create these bonds even on surfaces without catalytic properties, the Radical Deposition Source (RDS) has been constructed. In a student faculty grant we created a modified version of the RDS, which we test in this thesis by the means of low-energy electron diffraction in UHV conditions. As the substrate for deposited molecules, we use the surface of Si(111)-In $\sqrt{3}\times\sqrt{7}$ reconstruction with reported superconducting properties. We show that there are no diffraction spots that would correspond to activated molecules retrieved by the modified RDS. There are multiple explanations with not enough evidence to support any of them, however, this means that the issue is more complex. Understanding why the modified RDS did not work could aid with understanding the whole concept of self-assembled structures bonded covalently and could therefore contribute to the general knowledge of this phenomenon.