1020-35-124 **Xuan Hien Nguyen*** (hien.neih@gmail.com), UC Dept. of Mathematical Sciences, 2855 Campus Way, Old Chemistry Bldg., Cincinnati, OH 45221. *Construction of complete embedded self-similar surfaces under mean curvature flow. Part I.*

We carry out the first main steps towards the construction of new examples of complete embedded self similar surfaces under mean curvature flow. The general strategy is inspired by the work of N. Kapouleas: a surface that is close to being self similar is obtained by taking two known examples of self similar surfaces, a cylinder and plane, and desingularizing the circle at the intersection using an appropriately modified singly periodic Scherk surface, called the core. We then show that, for small boundary conditions, there exists a surface close to the core that satisfies the equation for self similar surfaces and the boundary conditions. A similar result is true for the outer plane, which is the plane with a disk removed: for small boundary condition on its boundary circle, we can find a function whose graph over the outer plane is self similar. (Received August 22, 2006)