Meeting: 1006, Lubbock, Texas, SS 2A, Special Session on Differential Geometry and Its Applications

1006-53-15 **Ye-Lin Ou*** (`ylou@ou.edu`), Department of Mathematics, The University of Oklahoma, Norman, OK 73019. *p-harmonic functions and the minimal surface equation in a Riemannian manifold.*

We study the minimal surface equation in a Riemannian manifold. After explaining the geometric meaning of the solutions and giving some entire solutions of the minimal surface equation in Nil space and in a hyperbolic space we find a link among p-harmonicity, horizontal homothety, and the minimality of the vertical graphs of a submersive function. We also study the transformation of the minimal surface equation under the conformal change of metrics. We prove that the foliation by the level hypersurfaces of a submersive p-harmonic function is a minimal foliation with respect to a conformally deformed metric. This implies, in particular, that the graph of any harmonic function from a Euclidean space is a minimal hypersurface in a complete conformally flat space, thus providing an effective way to construct (foliations by) minimal hypersurfaces. (Received December 15, 2004)