1104-76-201 **Jeongwhan Choi*** (jchoi@korea.ac.kr), Sungbukgu Anamdong 5-1, Dept of Math. Korea University, Seoul, 136-701, South Korea, **Shu-Ming Sun** (sun@math.vt.edu), Department of Mathematics, Virginia Polytech, Blacksburg, VA 24061, and **Sung-Im Whang** (siwhang@korea.ac.kr), Dept. of Math., Ajou University, Suwon, South Korea. *Surface waves on water over a bump with critical surface tension.*

We consider steady forced surface waves propagating on a two dimensional incompressible and inviscid fluid with a small bump placed on a rigid flat bottom. When the surface tension coefficient on the free surface is not zero and is near a critcal number, so called Bond number, KdV equation fails and the following a Kawahara equation with forcing is derived,

$\eta_t + \lambda\eta_x - (3/2)\eta\eta_x + (\tau/2)\eta_{xxx} - (1/90)\eta_{xxxxx} = b_x(x)$.

Here, λ, τ are free constant parameters for the speed of the water at far upstream and the surface tension of the surface respectively and $b(x)$ is a function for a small bump at the flat rigid bottom. We study above Kawahara equation with forcing theoritically and numerically. Existence theorems are proved and new numerical solutions have been found. The numerical stability of steady solutions are also studied. (Received September 01, 2014)