1125-35-753 **Lingju Kong*** (lingju-kong@utc.edu). *Weak solutions for nonlinear Neumann boundary value problems with $p(x)$-Laplacian operators.*

We study the nonlinear Neumann boundary value problem with a $p(x)$-Laplacian operator

$$\begin{cases} \Delta_{p(x)}u + a(x)|u|^{p(x)-2}u = f(x,u) & \text{in } \Omega, \\ |\nabla u|^{p(x)-2}\dfrac{\partial u}{\partial \nu} = |u|^{q(x)-2}u + \lambda|u|^{w(x)-2}u & \text{on } \partial\Omega, \end{cases}$$

where $\Omega \subset \mathbb{R}^N$, with $N \geq 2$, is a bounded domain with smooth boundary and $q(x)$ is critical in the context of variable exponent $p_*(x) = (N-1)p(x)/(N-p(x))$. Using the variational method and a version of the concentration-compactness principle for the Sobolev trace immersion with variable exponents, we establish the existence and multiplicity of weak solutions for the above problem. (Received September 10, 2016)