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**Azhar Saeed Alhammali\*** (alhammaz@oregonstate.edu), 2000 SW Campus way, Corvallis, OR 97331, and **Malgorzata Peszynska** (mpesz@math.oregonstate.edu), 2000 SW Campus way, Corvallis, OR 97331. *Analysis and numerical analysis of a coupled system for biofilm growth.*

We consider a coupled system of nonlinear parabolic partial differential equations solved for unknowns  $B$  and  $N$ . The first unknown  $B$  is subject to constraints; thus, the first equation is a parabolic variational inequality. The second equation is not constrained. The equations are coupled by the right-hand side growth and consumptions terms, which are Lipschitz in both variables. In the talk, we first present the well-posedness of the weak formulation of the problem. Next, we discuss the finite element discretization in space and backward Euler discretization in time of the problem. Furthermore, we discuss the solver. (Received January 22, 2018)