1097-35-459 **Gisèle Ruiz Goldstein*** (ggoldste@memphis.edu), Department of Mathematical Sciences, University of Memphis, Germantown, TN 38138, and **Alain Miranville** and **Giulio Schimperna**. *Mass Conservation in a Cahn-Hilliard System with Semipermiable Walls.*

We study the Cahn-Hilliard system

$$\psi_t = \Delta\mu \qquad \text{in } \Omega \tag{1}$$

$$\mu = -\Delta\psi + f(\psi) \qquad \text{in } \Omega \tag{2}$$

$$w\psi_t = \delta\Delta_{LB}\mu + \frac{\partial\mu}{\partial\mathbf{n}} \qquad \text{on } \partial\Omega \tag{3}$$

$$w\mu = \sigma\Delta_{LB}\psi + \frac{\partial\psi}{\partial\mathbf{n}} + g(\psi) \qquad \text{on } \partial\Omega. \tag{4}$$

Here ψ is the relative concentration, μ the chemical potential, f (resp. g) the derivative of the bulk potential F (resp. the surface potential G), and δ and σ the coefficients of the boundary diffusion. The interesting feature of our model centers on (4) which represents mass conservation when mass transfer between the bulk and the walls are considered We derive this system from physical principles and discuss existence, uniqueness, continuous dependence, and stability of solutions. (Received January 27, 2014)