**Electronic Supplementary Material**

The normalized variables in Equations (3.1a-g) are

, (A1a)

, (A1b)

, (A1c)

, (A1d)

, (A1e)

, (A1f)

, (A1g)

where  is the normalized Laplacian operator and . The normalized form of (3.2a,b) are

, (A2a)

. (A2b)

Appling the FT followed by the LT (FT-LT) on (A2a,b) and using the initial condition

, (A3a)

yields

, (A3b)

. (A3c)

The bounded solution of (A3a,b) is

, (A4a)

, (A4b)

where the ’s  are constants to be determined. Substituting the bounded solutions of (A4a,b) into FT-LT transformation of (A1a-e) gives

, (A5a)

, (A5b)

, (A5c)

, (A5d)

, (A5e)

, (A5f)

. (A5g)

The’s are obtained by imposing the boundary conditions of (2.2a-c). Taking the FT-LT of the boundary conditions gives

, (A6a)

, (A6b)

, (A6c)

Using (A3b,c,e,f) and (A6a-c), the constants are found to be

, (A7a)

, (A7b)

. (A7c)