1146-35-244   **Tahir Bachar Issa*** (`itb0004@auburn.edu`), 230 Opelika Road Apt 201, Auburn, AL 36830, and **Wenxian Shen**. *Persistence, coexistence and extinction in two species chemotaxis models on bounded heterogeneous environments.*

We consider a two species chemotaxis system with Lotka-Volterra type competition terms in heterogeneous media. We first find various conditions on the parameters which guarantee the global existence and boundedness of classical solutions with nonnegative initial functions. Next, we find further conditions on the parameters which establish the persistence of the two species. Then, under the same set of conditions for the persistence of two species, we prove the existence of coexistence states. Finally we prove the extinction phenomena in the sense that one of the species dies out asymptotically and the other reaches its carrying capacity as time goes to infinity. The persistence in general two species chemotaxis systems is studied for the first time. Several important techniques are developed to study the persistence and coexistence of the two species chemotaxis systems. Many existing results on the persistence, coexistence, and extinction on two species competition systems without chemotaxis are recovered. (Received January 23, 2019)