999-35-150 **Herbert Amann** and **Christoph Walker*** (`cwalker@math.unizh.ch`), Vanderbilt University, Department of Mathematics, 1326 Stevenson Center, Nashville, TN 37240. *Strong solutions to diffusive coagulation-fragmentation equations.*

We consider a coupled system of uncountably many equations of reaction-diffusion type, which describes the time evolution of particles of different sizes undergoing coagulation and fragmentation. Our approach allows us to treat simultaneously the classical model, where particles may grow unrestricted, and a variant thereof including a maximal particle size. Besides uniqueness and local-in-time existence of smooth solutions, we derive global existence in particular cases, e.g. for small initial values in the absence of fragmentation. (Received August 20, 2004)