1020-49-112 **Boris Mordukhovich** (boris@math.wayne.edu), Department of Mathematics, Wayne State University, Detroit, MI 48202, and **Dong Wang*** (dwang@uncfsu.edu), Department of Mathematics and Computer, Science, Fayetteville State University, 1200 Murchison Road, Newbold Station, Fayetteville, NC 28301. *Optimal Control of Semilinear Evolution Inclusions.*

In this take we consider a general optimal control problem for semilinear unbounded evolution inclusions with endpoint constraints in reflexive and separable Banach spaces. First, we construct a sequence of discrete approximations to the original optimal control problem for evolution inclusions and prove that optimal solutions to discrete approximation problems uniformly converge to a given optimal solution for the original continuous-time problem. Then, based on advanced tools of generalized differentiation, we derive necessary optimality conditions for discrete-time problems under fairly general assumptions. Combining these results with recent achievements of variational analysis in infinite-dimensional spaces, we establish new necessary optimality conditions for constrained continuous-time evolution inclusions by passing to the limit from discrete approximations. The results obtained are expressed in terms of nonconvex normal cones, subdifferentials, and coderivatives of the initial nonsmooth data. As an application of the main result obtained, we consider a Mayer type optimal control problem with initial conditions and endpoint constraints for semilinear parabolic partial differential inclusions and obtain new necessary optimality conditions for this problem. (Received August 21, 2006)