1056-35-960   **Irena Lasiecka***, University of Virginia, Department of Mathematics, P. O. Box 400137, Charlottesville, VA 22904. *Well-posedness of weak and strong solutions in nonlinear flow of gas and structure interactions.*

Dynamics for a class of nonlinear hyperbolic systems modeling gas -flow interactions will be considered. These are Euler equations (flow of gas) coupled at the interface with nonlinear plate (structure) equations. The coupling leads to non-conservative and non-dissipative models with supercritical sources.

It is shown that finite energy solutions do exist globally , are unique and satisfy Hadamard wellposedness criterium. In addition, long time behavior will be discussed. The proof is based on compensated compactness, harmonic analysis tools along with stability methods introduced in [I. Chueshov and I. Lasiecka, *Long-time behavior of second order evolution equations with nonlinear damping*, Memoirs of AMS, vol.195, no. 912, AMS, 2008.] (Received September 18, 2009)