

A coupled weakly compressible (WC) and total Lagrangian (TL) smoothed particle hydrodynamics (SPH) method is developed for simulating hydroelastic problems. The fluid phase is simulated using WCSPH method, while the structural dynamics are solved using TLSPH method. Fluid and solid components of the method are validated separately. A sloshing water tank problem is solved to test the WCSPH method while oscillation of a thin plate and large deformation of a cantilever beam are simulated to test the TLSPH method. After validating each component, the coupled WC-TL SPH scheme is used to simulate two benchmark hydroelastic problems. The first test case shows the evolution of water column with an elastic boundary gate, and the second one investigates the breaking water column impact on elastic structures. The agreement between WC-TL SPH results and literature data shows the ability of the proposed method in simulating hydroelastic phenomena.