

Supporting Information:

Figure S1 presents the fluorescence intensity as a function of capsule total deformation for five different capsules. **Figure S2** presents initial versus total deformation for the same capsules.

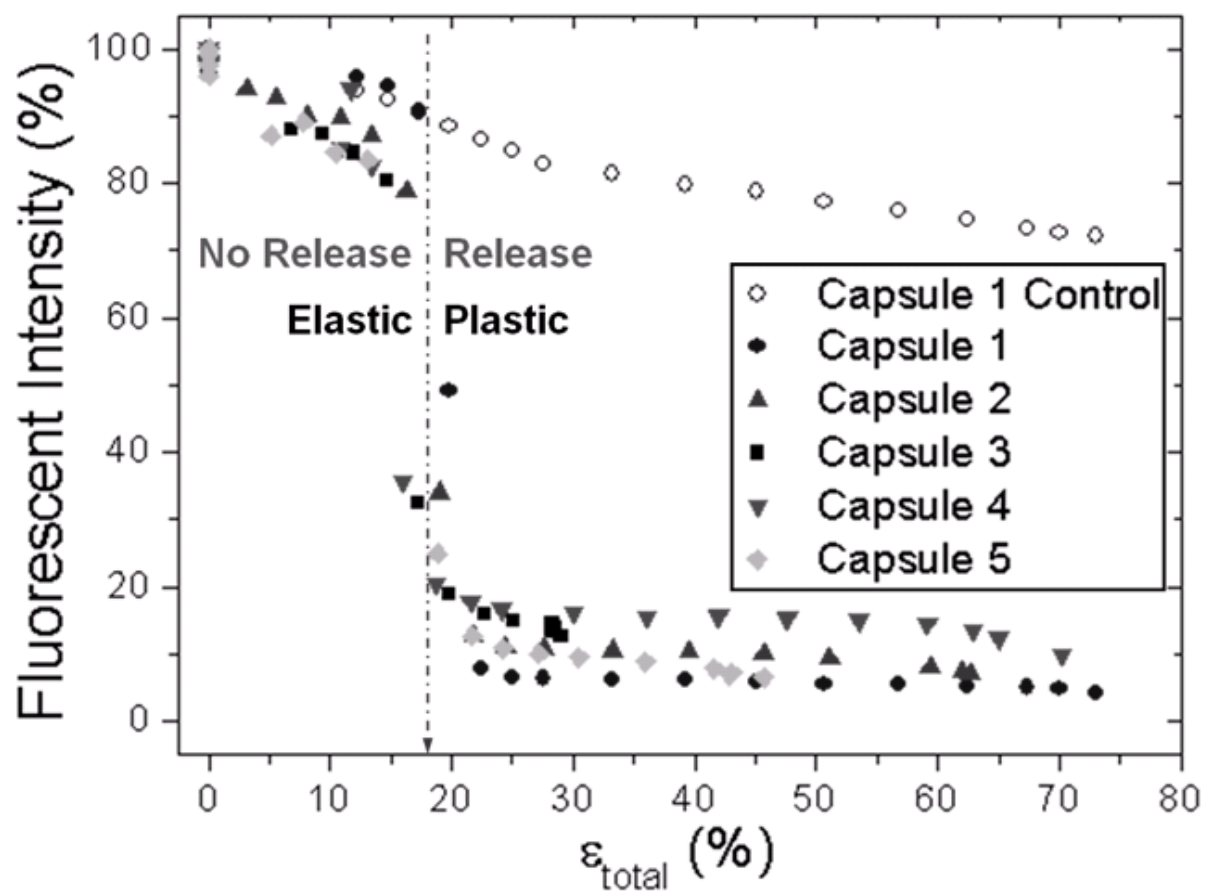


Figure S1. Average fluorescence intensity calculated from images taken after each push-pull cycle on five different capsules as a function of total capsule deformation. The dashed-dotted line indicates the release and plastic deformation threshold at ~18%.

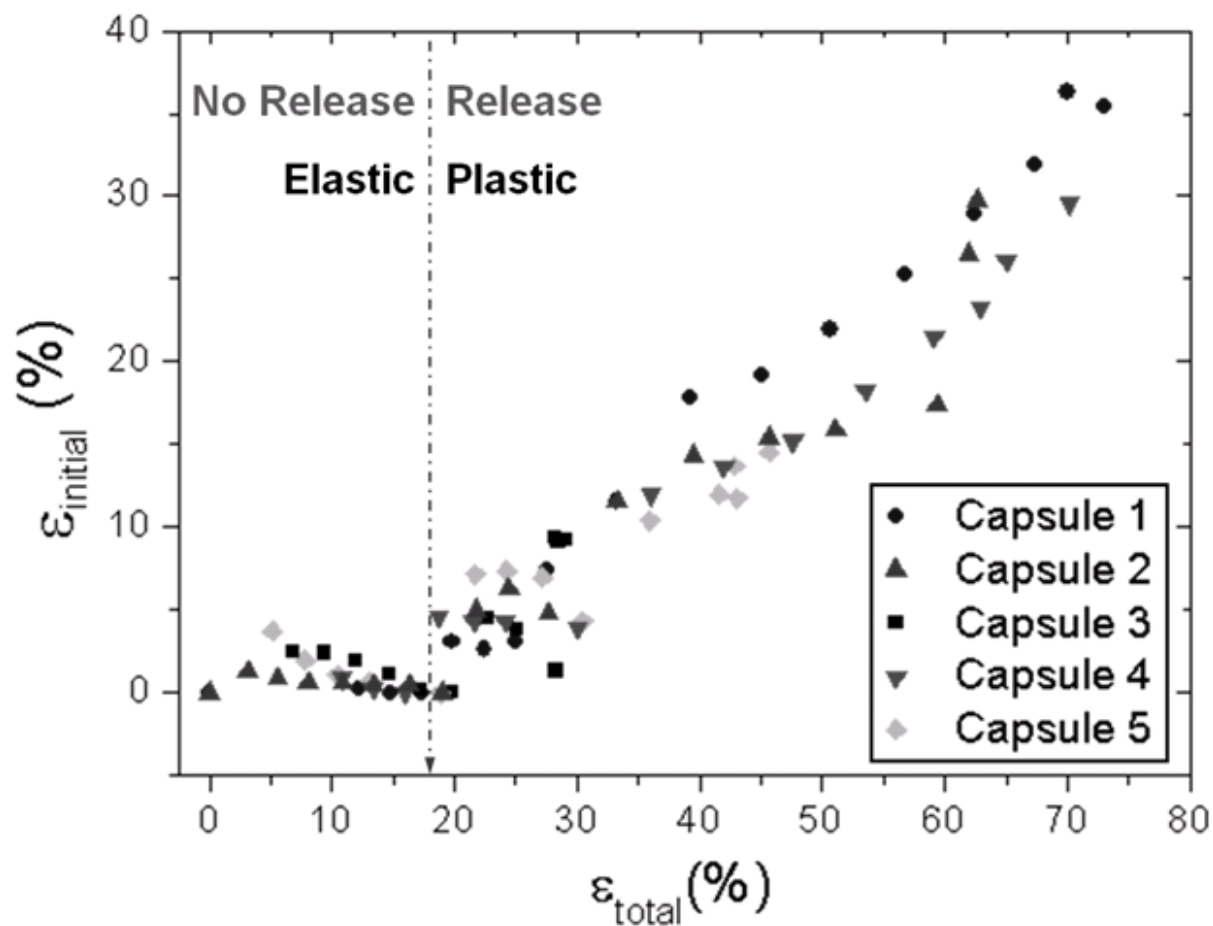


Figure S2. Capsule initial deformation as a function of total deformation applied during each push-pull cycle for five different capsules. The dashed-dotted line indicates the release and plastic deformation threshold at ~18%.