

**ESI videos captions**

ESI Video S1. Recording of the RDX (lower side of the membrane) and PETN (upper side of the membrane) particles behaviour when deposited together on the nanocalorimetry membrane. The video was obtained when heating the membrane at a rate of 3000 K/s.

ESI Video S2. Recording of the CuO nanoparticles behaviour when previously subjected to a 3:2 RDX to PETN molar concentration ratio in air. The video was obtained when heating the membrane at a rate of 3000 K/s.

ESI Video S3. Recording of the CuO nanoparticles behaviour when previously subjected to a 1:9 RDX to PETN molar concentration ratio in air. The video was obtained when heating the membrane at a rate of 3000 K/s.