Supplementary materials

Raman technology for process control: waste shells demineralization to produce transparent polymer foils reinforced with natural antioxidant, and calcium acetate by-product

Simona Cînta Pînzaru 1,2 \*, Iuliana-Cornelia Poplăcean 2 † , Karlo Maškarić 1,2 †, Dănuț-Dumitru Alexandru 1, Lucian Barbu-Tudoran 3,4, Tudor Tămaș 4, Fran Nekvapil 1,2,3, Neculai Bogdan 6

1 Babeş–Bolyai University, Biomolecular Physics Department, Kogălniceanu 1, 400084, Cluj-Napoca, Romania; [simona.pinzaru@ubbcluj.ro](mailto:simona.pinzaru@ubbcluj.ro)

2 Institute for Research, Development and Innovation in Applied Natural Sciences, Babeș-Bolyai University, Fântânele 30, Cluj-Napoca, Romania; [lucian.baia@phys.ubbcluj.ro](mailto:lucian.baia@phys.ubbcluj.ro)

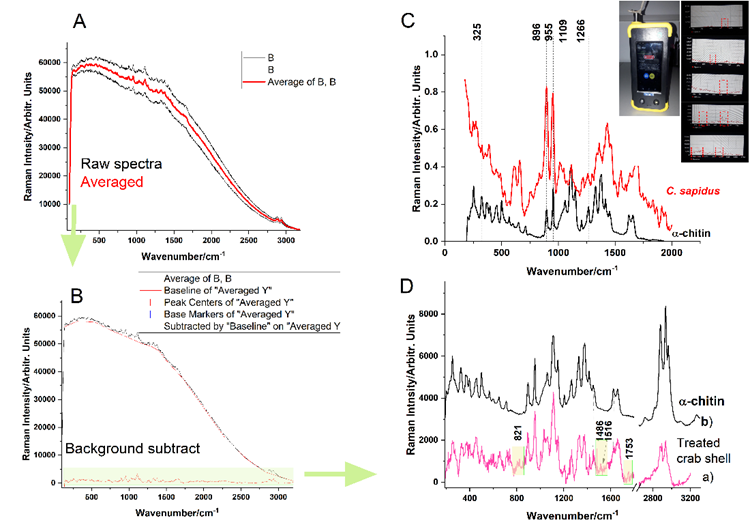
3 National Institute for Research and Development of Isotopic and Molecular Technologies, Donath 67-103, 400293 Cluj-Napoca, Romania; [itim@itim-cj.ro](mailto:itim@itim-cj.ro)

4 Electron Microscopy Center, Babeș-Bolyai University, Clinicilor 5-7, 400006 Cluj-Napoca, Romania; e-mail: lucianbarbu@yahoo.com

5 Department of Geology, Babeș-Bolyai University, M. Kogălniceanu 1, 400084 Cluj-Napoca, Romania; [tudor.tamas@ubbcluj.ro](mailto:tudor.tamas@ubbcluj.ro)

6 Metrohm Analytics Romania SRL, E. Racoviţă 5, 041753 Bucharest, Romania; [bogdan.neculai@metrohm.ro](mailto:bogdan.neculai@metrohm.ro)

**\*** Correspondence: simona.pinzaru@ubbcluj.ro; [iuliana.poplacean@stud.ubbcluj.ro](mailto:iuliana.poplacean@stud.ubbcluj.ro), karlo.maskaric@ubbcluj.ro

  
Fig. S1 Raman spectra recorded from demineralized crab shell indicating the raw data (A), their processing (averaging, background subtraction (B) and the comparison of results with the signal of α- chitin (D). Additional bands are highlighted in light yellow. (C) Raman  signal of acetic acid treated shell of *C. sapidus* directly tested with a hand-held Tactic ID Raman system resembling  alpha-chitin  bands (red dash-lined frames). Excitation: 785 nm (A, B, D), 1064 nm (C).