Morphology control of $CaTiO_3$ powders obtained by hydrothermal-microwave by using surfactant agents.

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Calcium Titanate can be applied in many research fields, as biomaterials (bone implants), as dielectrics resonators (wireless communications) and also in development of new luminescent materials (compact laser devices)[1]. In this way, $CaTiO_3$ fine powders were synthesized by hydrothermal microwave method at 140°C for 160 minutes from co-precipitate calcium and titanium hydroxides using surfactant agents for morphologic control. In this work, anionic and cationic surfactants were used in order to evaluate the influence of anchoring group at the solid surface. Raman spectroscopy results revealed typical $CaTiO_3$ Raman modes[2] for all samples, despite that oleic acid induce substantial change in the Raman spectrum. The X-ray diffraction (XRD) shown in the Figure 1 presents a single phase indexed as orthorhombic $CaTiO_3$ structure. The morphology control of CT compounds are depicted in FE-SEM micrographics, which presents non-regular cubes of pure CT samples, as shown in Figure 2 (a), and low aspect ratio parallelepipeds, as shown in Figure 2 (b) and (c).

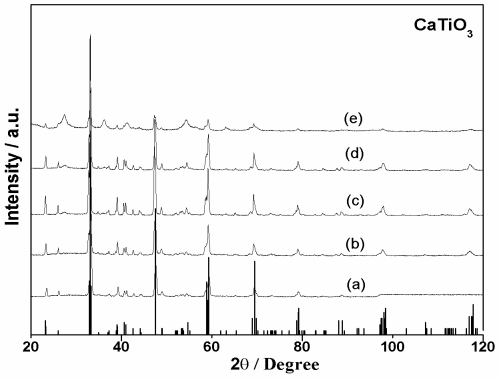

Figure 1: X-Ray diffraction of $CaTiO_3$ (a) $CaTiO_3$ pure, (b) CTAB, (c) TBA (d) PEG200 (e) oleic acid

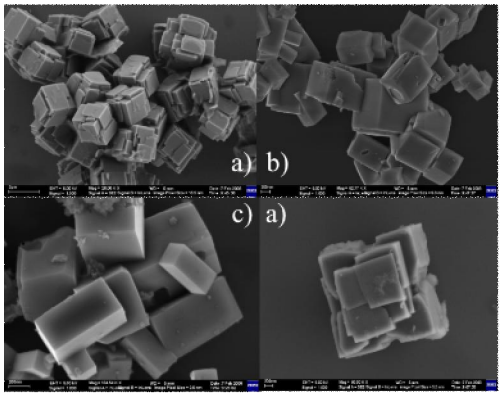

Figure 2: FE-SEM microscopy of $CaTiO_3$ samples (a) $CaTiO_3$ pure, (b) CTAB, (c) PEG200

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