

residual ash is enriched in silica and applied as a good adsorbent material for heavy metals [2].

The capture of carbon dioxide and other smoke gases from the biomass burning can be vitally achieved through hot manganese oxide at 200-250°C. The gases change the mineralogical composition of the applied manganese oxides ore as investigated by using XRD, IR and SEM-EDX analysis. The environmental impact of the process can be deduced from the significant change in the mineralogy of the manganese ore from mainly oxide forms to carbonate and halide rich phases. The ore impurities (e.g. Na, Mg, Ca, Al and F) contribute largely in the obtained mineral phases.

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Keywords: CO₂-sequestration, biomass burning, manganese mineralogy.

FA2-MS16-P22

Saccharide Yield From Interacted Biomass With Oxide Minerals For Separation and Fractional Crystallization In Acidic Route Of Mineral Processing. A.F. Bishay. *Nuclear Materials Authority, Cairo, Egypt*.

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Voluminous bio-wastes are resulted every year from agriculture where extensive literature review the article of their acidic dissolution [1]. The presence of organic matter represent a triggering factor that controls mineral dissolution in the acid sulfate soil [2]. For implications, rice straw is very promising material in the sulfate medium of mineral processing. The dissociated biomass promotes dissolution, separation and crystallization of oxide minerals avoiding the extra cost.

Under controlled boundary conditions and at room temperature, rice straw in dilute sulfate medium using sulfuric acid and manganese oxide yield saccharides and manganese sulfate crystals. Moreover, under drastic acidic conditions and biomass subjection into ilmenite sulfate process, reduced saccharide is obtained with the facility of continuous crystallization of iron sulfate off. The end-product is a cheap and chemically controlled nano-TiO₂ which find many photocatalysis applications.

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[2] Chengxing, C., Chuxia, L., Yonggui, W., Wenzhou, L., Jie, L., *Australian Journal of Soil Research*, 2006, 3840.

Keywords: Biomass, mineal processing, saccharides.

FA2-MS16-P23

Al/Si-ordering phenomena in sanidine megacrystals from the Eifel. Kathrin Demtröder, Sara Dehn, Michael Gopon, Jürgen Schreuer. *Institut für Geologie, Mineralogie und Geophysik, Ruhr-Universität Bochum, Germany*.

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Sanidine megacrystals from Volkesfeld (Rieden eruptive centre, East Eifel volcanic field, Germany) are well known for their unusual optical properties [1]. Starting from 1025 K their optic axial angle $2V$ changes rapidly at higher temperatures. This macroscopic effect has been interpreted as being associated with a corresponding increase of the Al/Si-disorder on the atomic level. The sanidines from Volkesfeld are further characterised by very low concentrations of dislocations indicating hydrothermal growth conditions [3]. However, the reason for the drastic and irreversible change of the optical properties is still under debate.

To clarify the role of water and chemical composition for the observed optical anomalies, the Al/Si-ordering has been investigated in sanidine megacrystals from four different eruptive centres of the Eifel and from Madagascar (served as reference) by means of single crystal X-ray diffraction, optical techniques and NMR-spectroscopic studies.

The chemical composition Na_xK_{1-x}AlSi₃O₈, as obtained by electron microprobe analysis, is characterised by $x \approx 0.15$ and $x \approx 0.27$ for megacrystals from the East Eifel and West Eifel volcanic field, respectively, with up to 2 at-% celsian and less than 0.02 at-% anorthite. The H₂O content varies between about 250 ppm and 400 ppm.

All investigated Eifel sanidines show irreversible optical anomalies at temperatures above 1073 K. Their optical axis angles $2V$ change drastically from about 30° in a plane perpendicular to (010) to about 35° within (010). According to [2] this corresponds to a decrease in the Al/Si order from $2t_1 \approx 0.70$ to 0.58. However, tetrahedral bond distances derived from single crystal structure analyses indicate $2t_1 \approx 0.58$ [4] for fresh samples and only small changes after annealing. The latter findings are supported by ²⁹Si and ²⁷Al NMR-experiments. Our contradictory experimental observations are probably caused by the water dissolved in the crystal structure of these nominally anhydrous minerals.

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Keywords: Al/Si-ordering, sanidine megacrystals, optical anomalies

FA2-MS16-P24

Core-Shell Ni_{0.5}TiOPO₄/C Composites as Anode Materials in Li Ion Batteries. Rachid Essehli^a, Brahim ElBali^b, Zehn Zhou^c, Hartmut Fuess^d. ^a*SUBATECH, Unité Mixte de Recherche 6457, École des mines de Nantes, CNRS/IN2P3, Université de Nantes, BP 20722, 44307 Nantes cedex 3 France.* ^b*Laboratory of Mineral Solid and Analytical Chemistry "LMSAC", Department of Chemistry, Faculty of Sciences, University Mohamed I, PO Box 624, 60000 Oujda, Morocco.* ^c*Institute of New Energy Material Chemistry, Key Laboratory of Advanced Micro/Nanomaterials and Batteries/Cells (Ministry of Education), Nankai University, Tianjin*