Title: Ultrasound assisted rare earth doped Wollastonite nanopowders: Labeling agent for imaging eccrine latent fingerprints and cheiloscopy applications

Authors: R.B. Basavaraj, H. Nagabhushana, G.P. Darshan, B. Daruka Prasad, S.C. Sharma, K.N. Venkatachalaiah

PII: S1226-086X(17)30092-8
DOI: http://dx.doi.org/doi:10.1016/j.jiec.2017.02.019
Reference: JIEC 3300

To appear in:

Received date: 1-10-2016
Revised date: 28-1-2017
Accepted date: 27-2-2017

Please cite this article as: R.B.Basavaraj, H.Nagabhushana, G.P.Darshan, B.Daruka Prasad, S.C.Sharma, K.N.Venkatachalaiah, Ultrasound assisted rare earth doped Wollastonite nanopowders: Labeling agent for imaging eccrine latent fingerprints and cheiloscopy applications, Journal of Industrial and Engineering Chemistry http://dx.doi.org/10.1016/j.jiec.2017.02.019

<AT>Ultrasound assisted rare earth doped Wollastonite nanopowders: Labeling agent for imaging eccrine latent fingerprints and cheiloscopy applications

<AU>R.B. Basavaraj[a], H.Nagabhushana[a*] ##Email##bhushanvlc@gmail.com##/Email##, G.P. Darshan[b], B.Daruka Prasad[c], S.C.Sharma[d], K.N.Venkatachalaiah[e]
<AU>

<AFF>[a]Prof. C.N.R. Rao Centre for Advanced Materials Research, Tumkur University *Tumkur 572 103, India*
<AFF>[b]Department of Physics, Acharya Institute of Graduate Studies, Bangalore 560 107, India
<AFF>[c]Department of Physics, BMS Institute of Technology and Management, VTU- Belagavi affiliated, Bangalore 560 064, India
<AFF>[d]Professor, Department of Mechanical Engineering, Jain University, Advisor, Jain group of Institutions, Bangalore, India
<AFF>[e]Amrita School of Engineering, Bangalore Campus, Amrita Vishwa-vidyapeetam, Bengaluru-
560035, India.

<PA>+91- 9945954010.

<ABS-Head><ABS-HEAD>Graphical abstract
<ABS-P>
<ABS-P><xps:span class="xps_Image">fx1</xps:span>
<*ABS-HEAD*>Highlights► Nano $CdSiO_3:Dy^{3+}$ powders were fabricated using modified sonochemical method. ► Compounds were used to enhance eccrine latent finger print and lips prints qualities. ► Surface morphologies were studied with different sonication influential parameters. ► Prepared compounds were useful for near ultraviolet white light emitting diodes.
<ABS-HEAD>Abstract

<ABS-P>Nano research offered new possibilities in surface-based science includes latent fingerprints and lips print detection on various surfaces. $CdSiO_3:Dy^{3+}$ nanopowders were fabricated via modified sonochemical method. Eccrine prints stained by optimized composition of prepared samples, exhibited high sensitivity, low background hindrance on various surfaces compared to traditional fluorescent powders. Surface morphologies were studied with different sonication influential parameters. Average crystallites size and band gap were 22 nm and 5.37 eV respectively. Photometric CIE and CCT values were close to near ultraviolet light with CP of 95% for the prepared compounds confirms their utility in the field of optoelectronics.
<KWD>Keywords: Eccrine latent fingerprint; ultrasound synthesis; color hindrance;

Photoluminescence.

<H1>1. Introduction