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Programme and The Book of Abstracts

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P.S.A.38.

**DENSE SPHERICAL RARE OXIDE PARTICLES SYNTHESIS VIA SPRAY
PYROLYSIS OF POLYMERIC PRECURSOR SOLUTION**

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Europium-doped ($Y_{0.5}Gd_{0.5}$)₂O₃ phosphor powder is synthesized *via* spray pyrolysis of polymeric precursor solution obtained by dissolving the stoichiometric amount of corresponding metal nitrates in ethylenediaminetetraacetic acid (EDTA) - ethylene glycol (EG) mixture. The 0.1M true stable solution is obtained after pH correction with NH₄OH (final pH=8.7). Ultrasonically (1.3MHz) generated aerosol droplets are decomposed at 550 °C in argon atmosphere. Following the initial attempt for obtaining dense, nanostructured spherical particles of pure ($Y_{0.5}Gd_{0.5}$)₂O₃:Eu³⁺ phase, as-prepared dark-gray powder is additionally thermally treated for 12 h in air up to 1100 °C. The particle morphology is analyzed by scanning electron microscopy (SEM) and transmission electron microscopy (TEM). Phase identification is performed by X-ray powder diffraction (XRPD) based on which the structural refinement through Rietveld method was done. Particle chemical purity is confirmed through EDS analysis, while laser particle sizer is used for determination of the particle size distribution.

P.S.A.39.

**IMPROVEMENT OF SOLUBILITY OF DISPERSE MATERIALS
BY THE MEANS OF THE MECHANOCHEMICAL TREATMENT**

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The solubility of drug is very important factor that determines its applicability, since solubility may act as rate-limiting step in absorption and therefore may affect the bioavailability of the drug. More than 40% of potential drug products suffer from poor water solubility which frequently results in potentially important products not reaching the market or not achieving their full potential.

In this work, an effort will be invested in order to improve solubility of verapamil hydrochloride by the means of mechanochemical treatment. Influence of mechanochemical parameters and surfactants on the physicochemical properties will be examined using a XRD, FE SEM technique and Malvern's Master Sizer instrument for particle size distribution. Finally, solubility of verapamil hydrochloride will be correlated with the particle size, structural and morphological characteristics of the drug via UV-VIS Cintra 101 spectrometer.