

The 10th JUACEP Seminar

第10回 名古屋大学日米協働教育プログラムセミナー

“Recent advances in processing ceramic nanopowders using LF-FSP and 3-D objects from them”

Lecturer: **Professor Richard M. Laine**

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略歴: 1969年カリフォルニア州立大学化学部卒。1973年南カリフォルニア大学博士号(化学)取得。デラウェア大、UCサンタバーバラ、スタンフォード国際研究所研究員を経て1987年ワシントンテクノロジーセンター研究教授、1990年からミシガン大学物質科学工学部教官。1999年同大教授。Mayaterials 創設者兼CEO、高分子科学工学センター統括者、EXIMOハードコーティング社共同創設者。

Date November 15, 2012 13:00~14:30

Venue Lecture Room IB 011

Liquid-feed flame spray pyrolysis (LF-FSP) of metal alkoxide and carboxylate complexes dissolved in ethanol generates a wide variety of phase pure single and mixed-metal oxide nanopowders. These nanopowders typically have average particle sizes of 20-60 nm with surface areas of 70-20 m²/g and are often single crystals with limited agglomeration and essentially no aggregation.

LF-FSP provides routes to nanoparticles with exact compositions for example Y₃Al₅O₁₂, 2SiO₂·3Al₂O₃, or even single phase materials that are off expected stoichiometry including spinels with compositions of (MO)_x(Al₂O₃)_{1-x} (M = Mg, Ni, Co) where x = 0.1-0.3. Efforts to transform these powders to composite ceramic materials with controlled grain size do not necessarily generate monoliths with final densities better than mixtures of the individual powders. The reasons for this and several novel results will be discussed.

Inquiry: JUACEP Office, Mech. Sci. Eng. (Ext. 2799)