Dr. Jacob Hormodaly – Researcher rank A +

Inorganic chemistry, glass and solid state chemistry

Our group is involved in R& D of glasses and solid state chemistry, thick film materials and technology, coatings for thermosolar applications & Ag-metallizations for solar cells. The main theme is chemistry of materials where glass compositions and inorganic materials are synthesized, characterized and applied to various projects which are detailed below.

Research interests & projects:

Glass chemistry: Synthesis and characterizations of inorganic oxide glasses for thick film compositions (conductor, resistor, sensor, dielectric and overglaze); bonding ,joining and strengthening of sapphire windows and domes & glass compositions for solar applications.

Solid state chemistry: Synthesis and characterizations of Ru-based resistor and thermistors materials such as pyrochlores, perovskites and spinels. Recent efforts are to synthesis and characterized spinels of Ru with very small particles sizes. Synthesis and application of spinels peroskites and othr structures for thermosolar applications. Some of the materials synthesized can be used as catalysts.

In the last 5 years, the main efforts were devoted to the development of coatings for thermosolar applications. Compositions with very high absorbptance (≥96% in the solar range 300nm-2500nm) stability at 650°C and compatibility with various steels were developed for companies. The current efforts are to scale up selected compositions and test them in commercial solar tower. Some of the technology developed was published in a patent applications and other aspects of it will be published in the patent literature only.

Selected publications:

- **J. Hormadaly,** " COATINGS FOR SOLAR APPLICATIONS" (WO2012127468), 25/3/2012
- Dyamant ,I ;Korin ,E ;**Hormadaly, J.** Characteristics of La2CaB10O19 crystallization from glass. J. of Non Crystalline Solids , 2010, 356(35-36), 1784-1790.
- **J .Hormadaly**, US Patent 7,435,695 Oct.14,2008, Lead-free phosphate glasses.
- Dyamant, I; Korin, E; **Hormadaly, J.** Thermal and some physical properties of glasses in the La2O3-CaO-B2O3 ternary system. J. Non-Crystalline Solids, 2008, 354 (27): 3135-3141.
- Kimmel, G; On, H; Itzhak, D; **Hormadaly, J.** Crystal structure of Nd2-xMxRu2O7-y (M=Cu, Ag) pyrochlores by X-ray powder diffraction. Powder Diffraction 2007, 22 (3): 231-235.
- Busana, MG; Prudenziati, M; **Hormadaly, J.** Microstructure development and electrical properties of RuO2-based lead-free thick film resistors. J. Mat. Electr.,2006, 17 (11): 951-962.