Programme & The Book of Abstracts

Seventeenth Annual Conference

YUCOMAT 2015

Herceg Novi, Montenegro, August 31 – September 4, 2015

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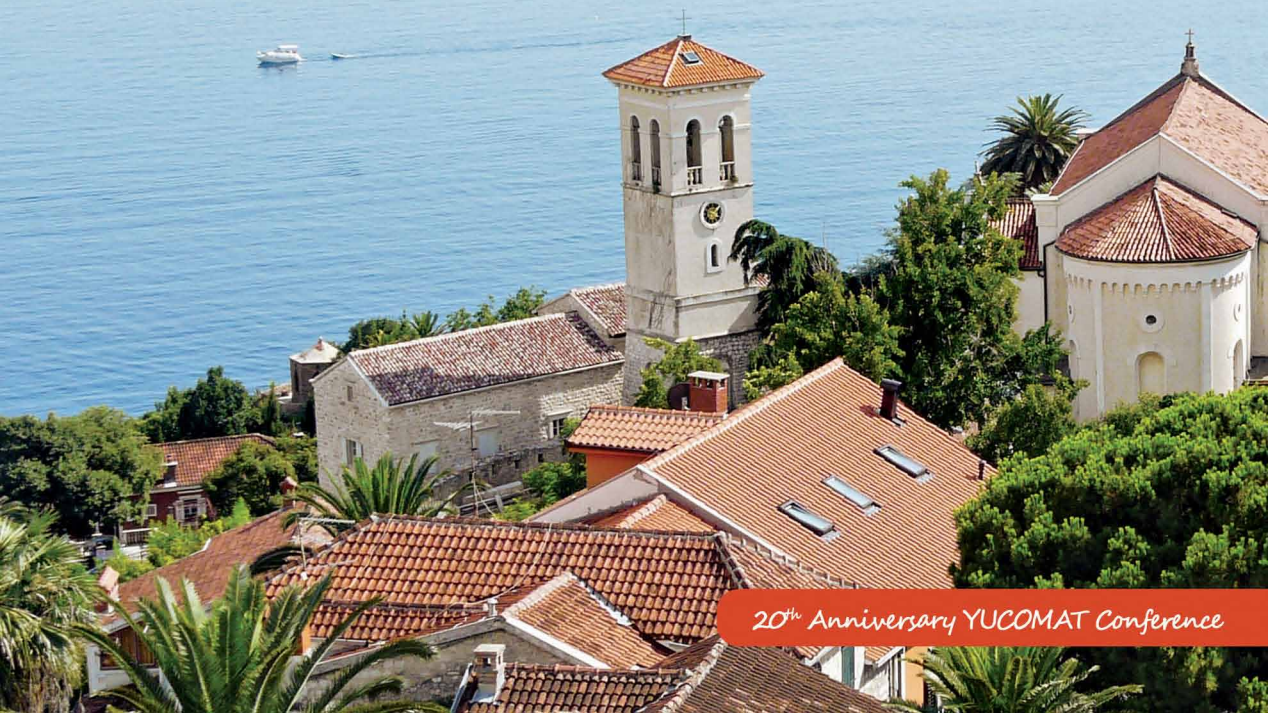

20th Anniversary YUCOMAT Conference

SEVENTEENTH ANNUAL CONFERENCE

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O.S.A.8.

Fluorine Doping of Layered Na_xCoO_2 Structure

Dragana Jugović, Miloš Milović, Miodrag Mitrić, Nikola Cvjetićanin, Max Avdeev, Bojan Jokić, Dragan Uskoković
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The room temperature Na-ion secondary battery has been under focus lately due to its feasibility to compete against the already well-established Li-ion secondary battery. Transition metal oxides of general formula Na_xMO_2 have been investigated as potential cathode materials for sodium batteries. Layered Na_xCoO_2 is synthesized via solid-state method at 900 ºC in air atmosphere. Fluorine doping of the as-prepared powder is established by the use of ammonium hydrogen difluoride (NH_4HF_2) as a fluorinating agent. The fluorination takes place only at low temperature (200 ºC), while the treatment at higher temperatures (≥ 400 ºC) facilitates the formation of NaF. It is shown that various and controllable amounts of fluorine can be successfully incorporated into the structure. Finally, the effects of fluorine doping on both structural and electrochemical properties are examined.

O.S.A.9.

Advances in Improvement of Pb-Based Thin Layers Deposited on Nb Substrate

Anna Kosinska[1], Marek Barlak[1], Jerzy Lorkiewicz[1], Jacek Sekutowicz[2], Robert Nietubyć[1], Lukasz Kurpaska[1], Katarzyna Nowakowska – Langier[1]
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Improvement of adhesion between deposited lead thin layer on niobium substrate is a challenging task due to their highly different physical and chemical characteristics. The fundamental problem is that niobium and lead tend to oxidize which cause poor deposition of the applied layers. In this study we use the Rod Plasma Injector (RPI) technique (operating in PID and DPE regimes) to solve the problem of insufficient adhesion between Pb layer deposited on Nb substrate with or without additional Ti or Sn layers. In order to assess thickness of thin layer we use Calotester device and SEM/EDX techniques. Finally, nanoindentation technique was implemented to evaluate mechanical properties of studied system. Reported results revealed that melting of the substrate occurs above certain energy threshold. Moreover, the Ti layer unlike the Pb layer is continuous, smooth and homogeneous. The goal of this study is to improve adhesion of deposited Pb thin layer.