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KARYA ILMIAH : JURNAL ILMIAH

Judul Karya Ilmiah (Artikel)	:	Systematic study of electronic properties of Fe-doped TiO_2 nanoparticles by X-ray photoemission spectroscopy
Jumlah Penulis	:	5 Orang Penulis ke : 3
Nama Penulis	:	Naglaa H. S. Nasralla, Mahboubeh Yeganeh, **Yayuk Astuti**, Sunthon Piticharoenphun, Lidija Siller
Identitas Jurnal Ilmiah		
a. Nama Jurnal	:	Journal of Materials Science: Materials in Electronics
b. Nomor ISSN	:	1573-482X
c. Volume, No, Bulan, Tahun	:	29, 20, Agustus, 2018
d. Penerbit	:	Springer US
e. DOI artikel (jika ada)	:	https://doi.org/10.1007/s10854-018-9911-5
f. Alamat web jurnal	:	https://www.springerprofessional.de/en/systematic-study-of-electronic-properties-of-fe-doped-tio2-nanop/16066584
g. Indexing	:	Scopus

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b. Ruang lingkup dan kedalaman pembahasan: Ruang lingkup penelitian ini tentang studi XPS Fe doped TiO_2. Data yang disajikan dibahas dengan detil dan lengkap, disertai referensi pendukung
c. Kecukupan dan kemutahiran data/informasi dan metodologi: Kualitas dan kuantitas pustaka baik. Metodologi disajikan detil sehingga bisa diulang peneliti lain.
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e. Indikasi Plagiasi: Tidak ada
f. Kesesuaian bidang ilmu: Sesuai dengan bidang ilmu penulis yaitu kimia

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Drs. Gunawan, M.Si., Ph.D
NIP. 196408251991031001

Unit kerja :
Departemen Kimia FSM Undip
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Nama Penulis : Naglaa H. S. Nasralla, Mahboubeh Yeganeh, **Yayuk Astuti**, Sunthon Piticharoenphun, Lidija Siller

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b. Nomor ISSN : 1573-482X
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d. Kelengkapan unsur dan kualitas penerbit (30%)	12					12
Total = (100%)	**40**					**39,5**
Kontribusi Pengusul (Penulis Anggota)	**40%x40=4 4**					**40%x39,5=3,95 4**

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e. Indikasi Plagiasi: Tidak ada
f. Kesesuaian bidang ilmu: Sesuai dengan bidang ilmu penulis yaitu kimia

Semarang,
Reviewer 2

Dr.M.Cholid Djunaedi, S.Si, M.Si.
NIP. 197007021996031004

Unit kerja :
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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
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c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12	12	12
d. Kelengkapan unsur dan kualitas penerbit (30%)	11,5	12	11,75
Total = (100%)	**39**	**39,5**	**39,25**
Kontribusi Pengusul (Penulis Anggota)			**40%x39,25=3,925 4**

Semarang, April 2020

Reviewer 2

Dr. M. Cholid Djunaedi,. S.Si., M.Si.
NIP. 197007021996031004

Unit kerja :
Departemen Kimia FSM Undip

Reviewer 1

Drs. Gunawan, M.Si., Ph.D
NIP. 196408251991031001

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d. Kelengkapan unsur dan kualitas penerbit (30%)	12	11,75
Total = (100%)	**40**	**39,25**
Kontribusi Pengusul (Penulis Anggota)		**40%x39,25=3,925 4**

Semarang, April 2020

Reviewer 2

Dr. M. Cholid Djunaedi,. S.Si., M.Si.
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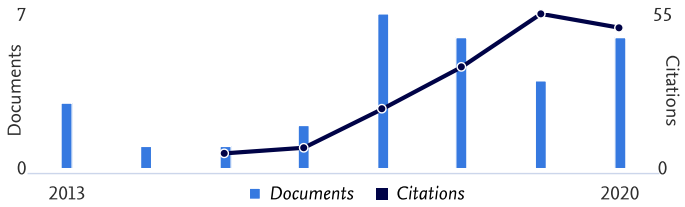

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Journal of Materials Science: Materials in Electronics
Volume 29, Issue 20, 1 October 2018, Pages 17956-17966

Systematic study of electronic properties of Fe-doped TiO_2 nanoparticles by X-ray photoemission spectroscopy (Article)

Nasralla, N.H.S.[a,c], Yeganeh, M.[b], Astuti, Y.[a,d], Piticharoenphun, S.[a,e], Šiller, L.[a]

[a]School of Chemical Engineering and Advanced Materials, Newcastle University, Newcastle upon Tyne, NE1 7RU, United Kingdom
[b]School of Natural Science, Kosar University of Bojnord, P. O. Box 94104455, Bojnord, Iran
[c]Physics Division, Electron Microscope and Thin Film Department, National Research Centre, Dokki, Giza, 12622, Egypt

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Abstract

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The importance of investigating the electronic structure of Fe doped TiO_2 nanoparticles lies in understanding their various magnetic and optical applications. In this study Fe doped TiO_2 nanoparticles were synthesized by sol–gel method in a wide range of Fe/Ti molar ratios (1, 3, 5, 8, and 10%) and post annealing at 400, 600 and 800 °C in air. The structure and size of nanoparticles were studied by X-ray diffraction and transmission electron microscopy, respectively. Systematic study of the existing states of Fe ions in Fe doped TiO_2 and transformation of the existing states as a function of annealing temperature and Fe concentration were carried out utilizing high-resolution X-ray photoemission spectroscopy (XPS). The XPS results showed that Fe was present in all samples while Fe ions were detected in mixed valence (Fe^{2+} and Fe^{3+}) states. The Fe^{3+} ions were dominant in the surface region of the nanoparticles. Moreover, the Ti in Fe:TiO_2 nanoparticles was assigned to the Ti^{4+} while a small shift towards lower binding energies was observed upon increasing the annealing temperature and dopant level. This confirms the successful incorporation of Fe into TiO_2, and the shifts in binding energies were attributed to the anatase to rutile transformation. The results verify that doping by Fe up to 10% do not exceed the limit of Fe substitutation into TiO_2 lattice. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

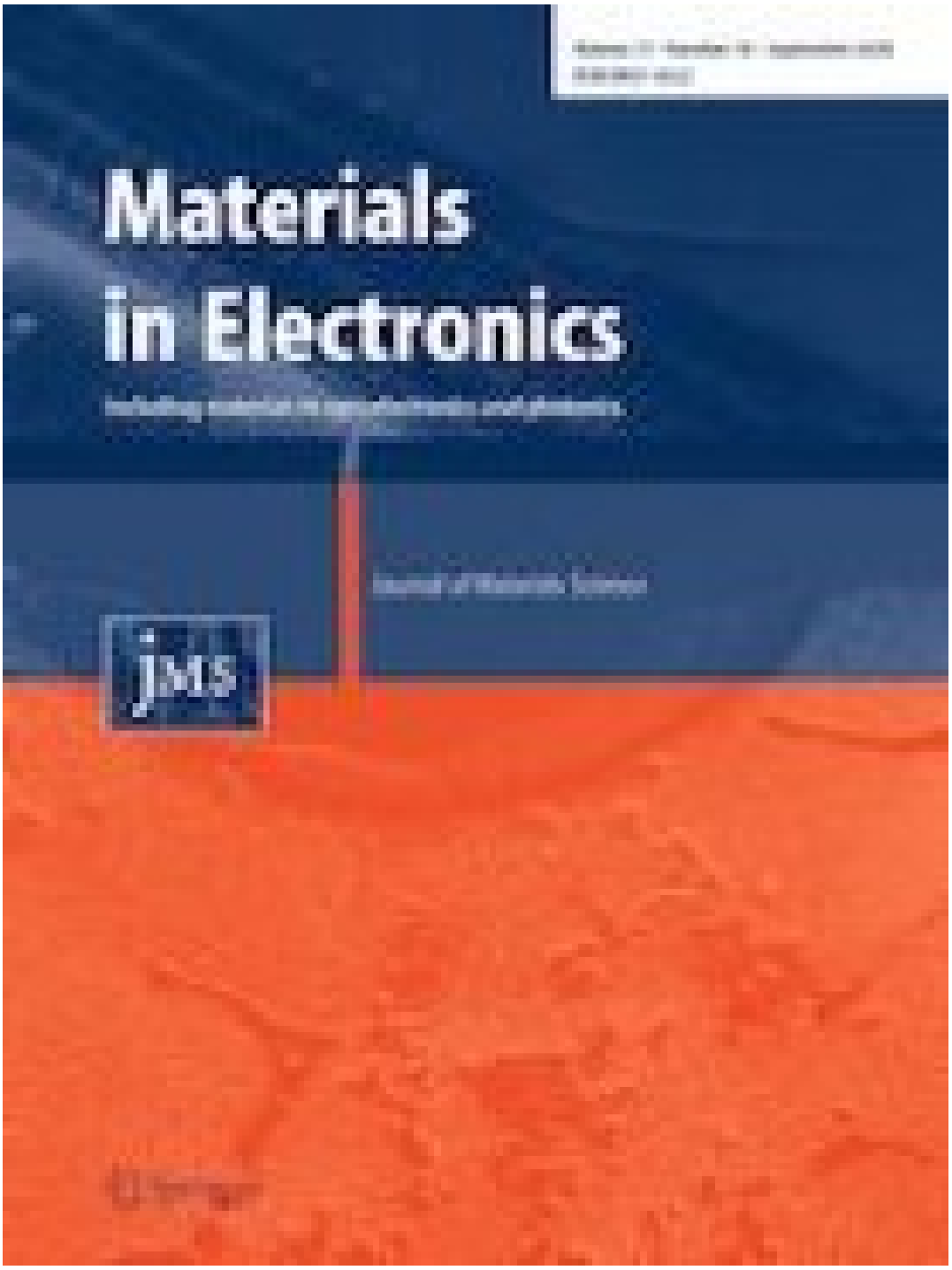
SciVal Topic Prominence

Topic: Photocatalytic Activity | Tio2 | Titanium Dioxide Nanoparticle

Prominence percentile: 99.721

Indexed keywords

Engineering controlled terms: Annealing, Binding energy, Doping (additives), Electronic properties, Electronic structure, High resolution transmission electron microscopy, Ions, Nanomagnetics, Nanoparticles, Oxide minerals, Sols, Synthesis (chemical), Titanium dioxide, Transmission electron microscopy, X ray photoelectron spectroscopy



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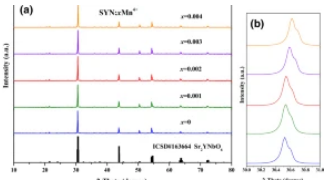

47. **Influences of filler dispersity in epoxy resin on the electrical and mechanical performances of embedded capacitance materials**

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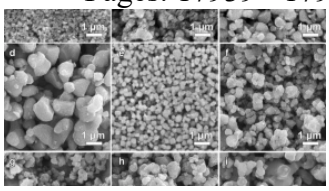
- Weikai Zheng
- Hong Chen
- Fengwei Wang
- Content type: OriginalPaper
- Published: 22 August 2018
- Pages: 17939 - 17947



48. **The effect of tantalum substitution on the microstructure and dielectric and piezoelectric properties of $Pb_{0.99}(Zr_{0.95}Ti_{0.05})_{0.98}Nb_{0.02}O_3$ ceramics**

Authors (first, second and last of 4)

- Afshin Ansari
- Mohammad Masoud Mohebi
- Reza Tabarzadi
- Content type: OriginalPaper
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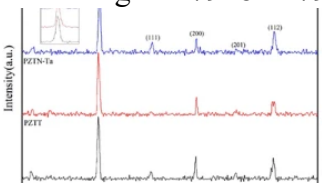
- Pages: 17948 - 17955



49. **Systematic study of electronic properties of Fe-doped TiO_2 nanoparticles by X-ray photoemission spectroscopy**

Authors (first, second and last of 5)

- Naglaa H. S. Nasralla
- Mahboubeh Yeganeh
- Lidija Šiller
- Content type: OriginalPaper
- Published: 22 August 2018
- Pages: 17956 - 17966

The effect of tantalum substitution on the microstructure and dielectric and piezoelectric properties of $Pb_{0.99}(Zr_{0.95}Ti_{0.05})_{0.98}Nb_{0.02}O_3$ ceramics

- Published: 08 September 2018

The effect of tantalum substitution on the microstructure and dielectric and piezoelectric properties of $Pb_{0.99}(Zr_{0.95}Ti_{0.05})_{0.98}Nb_{0.02}O_3$ ceramics

- Afshin Ansari[1],
- Mohammad Masoud Mohebi[1],
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- Saeid Baghshahi[1] &
- Reza Tabarzadi[2]
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Journal of Materials Science: Materials in Electronics **volume 29**, pages17948–17955(2018)Cite this article

Abstract

Lead zirconate titanate (PZT95/5) based piezoelectric ceramics with the compositions $Pb_{0.99}(Zr_{0.95}Ti_{0.05})_{0.98}Ta_{0.02}O_3$ (PZTT) and $Pb_{0.99–0.5x}(Zr_{0.95}Ti_{0.05})_{0.98–x}Nb_{0.02}Ta_xO_3$ (PZTN), where x = 0.0, 0.005, 0.010, 0.015 and 0.020 were synthesized using conventional solid state sintering at 1250 °C for 2 h in air. The effect of tantalum substitution on the microstructure, dielectric and piezoelectric properties of the samples were studied. The results showed that the Ta-doped samples had finer microstructures. The PZTT samples had microstructures with finer grains (average grain size of 3.80 μm) in comparison with the PZTN samples (average grain size of 5.33 μm). The relative densities of the PZTN and PZTT samples were approximately 94.1 and 94.4%, respectively. Moreover, the relative dielectric constant (ε_r), piezoelectric coefficient (d_{31}) and elastic compliance (S_{11}^E) of the samples reached the maximum values of 349, − 15.2 PC/N and 8.42 Pm^2/N, respectively at 1.5 mol% tantalum substitution. Furthermore, the relative dielectric constant (ε_r), piezoele coefficient (d_{33}) and voltage coefficient (g_{33}) of the PZTN samples reached the optimal values of 306, 6 and 25.44 mV m/N, respectively, in comparison with the PZTT samples (329, 67 PC/N and 21.43 mV m/N,

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   R.E. Setchell, Shock wave compression of the ferroelectric ceramic $Pb_{0.99}(Zr_{0.95}Ti_{0.05})_{0.98}Nb_{0.02}O_3$: depoling currents. Appl. Phys. **97**, 013507–013516 (2005)

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7. 7.

   M. Avdeev, J.D. Jorgensen, S. Short, G.A. Samara, E.L. Venturini, P. Yang. B. Morosin, Pressure-induced ferroelectric to antiferroelectric phase transition in $Pb_{0.99}(Zr_{0.95}Ti_{0.05})_{0.98}Nb_{0.02}O_3$. Phys. Rev. B **73**, 064105 (2006)

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Z.Q. Zhuang, M.J. Haun, S.J. Jang, L.E. Cross, Composition and temperature dependence of the dielectric, piezoelectric and elastic properties of pure PZT ceramics. IEEE Trans. Ultrason. Ferroelectr. Freq. Control **36**, 413–416 (1989)

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Influence of Mg_2SiO_4 addition on crystal structure and microwave properties of $Mg_2Al_4Si_5O_{18}$ ceramic system

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Influence of Mg_2SiO_4 addition on crystal structure and microwave properties of $Mg_2Al_4Si_5O_{18}$ ceramic system

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Abstract

In this work, $(1-x)Mg_2Al_4Si_5O_{18}$–xMg_2SiO_4 ($x = 0$–80 wt%) composite dielectric ceramics were prepared via traditional solid-state reaction. The results indicate the sinterability of $Mg_2Al_4Si_5O_{18}$ ceramics is greatly enhanced with the increasing content of Mg_2SiO_4 by reducing densified temperature from 1460 to 1340 °C. Rietveld refinement analysis shows a great chemical compatibility between two phases. With the increase of Mg_2SiO_4 content, the densifications of ceramics can be improved. However, excessive amount of Mg_2SiO_4 induces abnormal grain growth, which deteriorates the microwave dielectric properties. At x = 50 wt%, low-ε_r dielectric ceramics with high Q × f value was obtained when sintered at 1340 °C: $\varepsilon_r = 5.73$, Q × f = 76,374 GHz and $\tau_f = -24$ ppm/ °C. Relative cheap raw materials and adjustable permittivity values, which makes it promising for low-permittivity microwave applications.

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Low-temperature sintering of $BaTiO_3$ positive temperature coefficient of resistivity (PTCR) ceramics

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Abstract

Donor–acceptor-codoped and Ti-excess barium titanate ceramics $BaTi_{1.007-x-y}Nb_xMn_yO_3$ with positive temperature coefficient of resistivity (PTCR) behavior were prepared via the mixed oxide route. Resistivity versus temperature characteristics of samples sintered in air at 1350 °C were investigated as a function of dopant concentrations. A low room-temperature resistivity $\rho_{RT} = 80$ Ωcm and large resistivity change ρ_{max}/ρ_{min} of four orders of magnitude at the Curie temperature was observed for $x = 0.002$ and $y = 0.0003$. To reduce the sintering temperature and enable low-temperature sintering of PTCR ceramics, several additives inducing liquid-phase sintering were tested. We report on the effect of BaB_2O_4 and $LiF–SrCO_3$ additives on the sintering behavior, microstructure, and ρ(T) characteristics. It is shown by dilatometry that the sintering temperature is drastically reduced. PTCR ceramics with resistivity change ρ_{max}/ρ_{min} of two orders magnitude were obtained with addition of 3 wt% BaB_2O_4 and sintering at 950 °C, or with a combined addition of 3 wt% BaB_2O_4 and 0.25 wt% $LiF–SrCO_3$ and sintering at 900 °C.

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Determination of the optimum Co concentration in Co:Sb_2S_3 thin films

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Abstract

This current study consists of two phases. In the first step, PbS, Sb_2S_3:Co(0.25%), Sb_2S_3:Co(0.5%), Sb_2S_3:Co(0.75%) and Sb_2S_3:Co (1%) and Sb_2S_3:Co (2.5%) thin films were successfully synthesized on Zn_2SnO_4 coated on FTO conductive glasses using chemical bath deposition method at room temperature. The photovoltaic properties of the synthesized thin films were examined by applying both incident photon-to-current efficiency (IPCE) and current density (J)–voltage (V) measurements. It was observed that Co:Sb_2S_3 thin films with different Co concentrations have higher IPCE (%) and power conversion efficiency (η%) values higher than pure Sb_2S_3. Moreover, the Co concentration, which provides the best efficiency, was determined as 1% compared to other concentrations. In the second phase of the study; structural, elemental and optical properties of Sb_2S_3:Co (1%) thin film were investigated using X-ray diffraction, energy dispersive X-ray and optical absorption measurements, respectively. Consequently, it was clearly observed that the Co dopant affects particle size, energy band gap and power conversion efficiency of Sb_2S_3 thin films. In addition, our study suggests that Co:Sb_2S_3 thin films are promising materials that can be used in photovoltaic applications.

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