

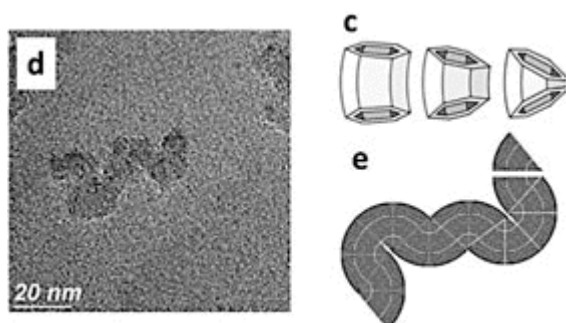
## BRIEF REPORTS

### 1. Sophisticated and Spontaneous Template-Free Organization of Silica Nanoparticles During Storage

*Nina Bogdanchikova, Oxana Martynyuk, Roberto L. Vazquez-Gomez, Francisco Ruiz, Alejandro Huerta-Saquero, Trino A. Zepeda, Alexey Pestryakov, Josué D. Mota-Morales*

1650037

Silica nanoparticles, without any inorganic metal oxide or organic participant, are able to spontaneously self-assembling, presenting sophisticated forms and hierarchy. Silica nanostructures comprised nanorings of ca. 10 nm that self-assemble towards preferential geometries under moisture conditions. Self-assembling of those nanorings took place during post-synthesis, spontaneously and in solventless conditions, i.e., during storage.

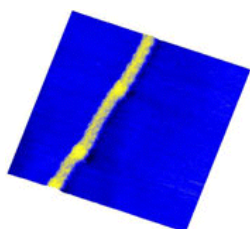


### 2. Adsorption and Self-Assembly of Anticancer Antibiotic Doxorubicin on Single-Walled Carbon Nanotubes

*Andrés Rodríguez-Galván, Oscar Amelines-Sarria, Margarita Rivera, María del Pilar Carreón-Castro, Vladimir A. Basiuk*

1650038

Experimental and theoretical tools were used to study the interaction between the anticancer antibiotic doxorubicin and single-walled carbon nanotubes. The scanning probe microscopy was used for a morphological characterization, and density functional theory calculations to facilitate the interpretation of the experimental images. The results showed the doxorubicin molecules were assembled in a helical pattern onto the single-walled carbon nanotubes. The orientation of the individual molecules was supported by the theoretical results.

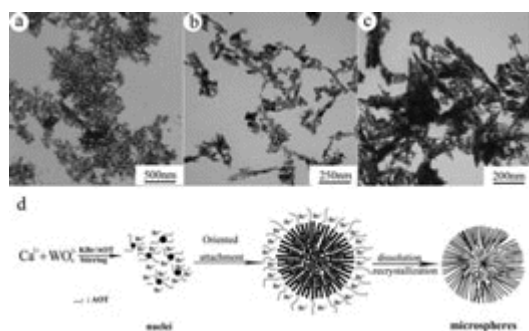


### 3. Mono-Disperse $\text{CaWO}_4$ Microsphere with Hierarchical Structures: Room Temperature Synthesis and its Optical Properties

Suyuan Zeng, Rongfeng Tang, Huaifen Su, Shengxia Duan, Yuanwei Sun, Lei Li, Dezhi Sun

1650039

An inorganic salt-assisted micro-emulsion method was proposed for the preparation of monodisperse  $\text{CaWO}_4$  microspheres with hierarchical structures. The formation of these hierarchical monodisperse microspheres is considered to be the synergistic effect of surfactant and the inorganic salt added. The generality of this synthetic method for other metal tungstates was also carefully investigated, which shows the morphologies of the final product not only depend on the synthetic conditions, but also depend on the growth habit of the materials.

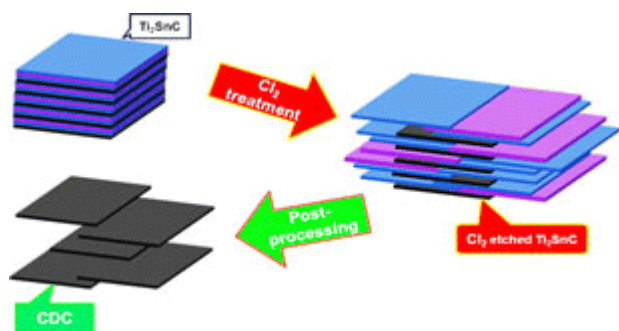


### 4. Synthesis and Gas Adsorption Properties of Carbide-Derived Carbons from Titanium Tin Carbide

Yuanyuan Zhu, Aiguo Zhou, Jin Jia, Junjun Wang, Jiang Liu, Baolin Xing, Chuanxiang Zhang

1650040

Nanoporous carbide-derived carbons (CDCs) with large surface area, tunable pore size, and abundant precursors are excellent gas storage materials for energy efficient transport. This paper is the first report on CDCs produced from  $\text{Ti}_2\text{SnC}$  via chlorination at the temperature range of 400–1100° C. Gas adsorption experiments also confirmed that  $\text{Ti}_2\text{SnC}$ -CDCs are novel and capable materials for hydrogen/methane storage by further optimization design.

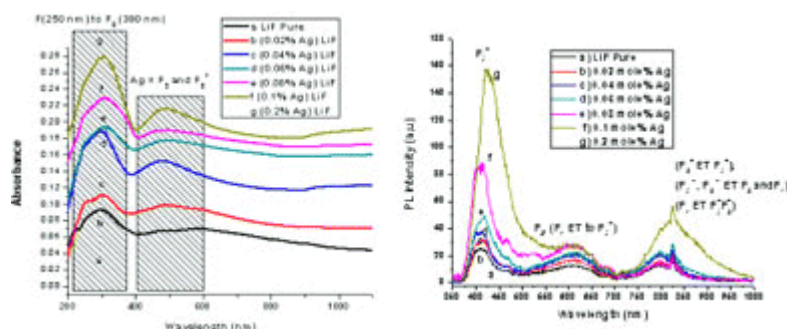


## 5. Effect of Crystal Size and Ag Concentration on the Thermoluminescent Response of Pure and Ag-Doped LiF Cubes

Miguel A. Vallejo, Modesto A. Sosa, Esteban Rivera, Juan C. Azorín, Jesús Bernal, Ricardo Navarro, Emma K. Encarnación, Luis A. Díaz-Torres

1650041

Nanocrystals of LiF:Ag with a crystallite average size of 26.5 nm were synthesized by co-precipitation method and the crystal size was successfully controlled by varying the ethanol/water ratio of the synthesis media. It was found that the grain size plays a key role in the thermoluminescent properties, being the TL intensity stronger as the grain size is smaller.

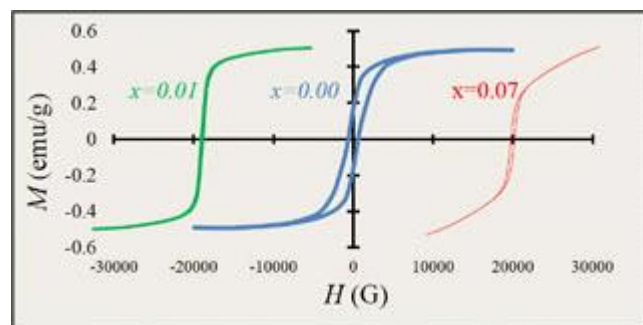


## 6. Structural, Optical and Room Temperature Magnetic Study of Mn-Doped ZnO Nanoparticles

Majed Sharrouf, Ramadan Awad, Salem Marhaba, Douaa El-Said Bakeer

1650042

ZnO nanoparticles were doped with different Mn weight concentrations leading to drastic change in the structural, optical and magnetic properties of undoped ZnO nanoparticles. There was a high compatibility among all the techniques used. At room temperature, three magnetic behaviors showed up in the doped samples, whereas only ferromagnetism appeared in the undoped sample. There was an optimum value for the Mn content that has the best ferromagnetic nature, chosen to be the best candidate to be used in spintronic devices.

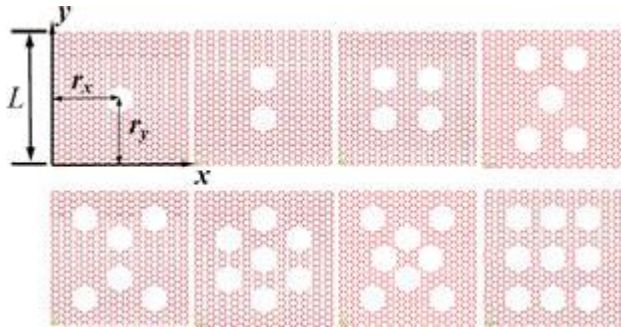


## 7. Vibrational Analysis of a Single-Layered Nanoporous Graphene Membrane

Haw-Long Lee, Win-Jin Chang

1650043

The effects of the pore location and porosity on the vibrational behavior of the armchair and zigzag nanoporous graphene layers with different boundary conditions were analyzed using the atomic-scale finite element method. For the armchair- and zigzag-structured nanoporous graphenes, the frequencies decrease with increasing porosity. The frequency of the zigzag nanoporous graphene is higher than that of the armchair one.

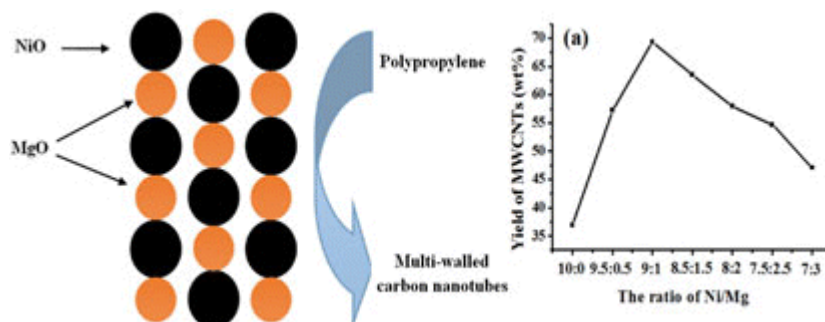


## 8. Ni-Mg Bimetallic Catalysts for Preparation of Multi-Walled Carbon Nanotubes from Polypropylene: Influence of the Ratio of Ni/Mg

Yinlong Shen, Weiguang Gong, Baicun Zheng, Lei Gao

1650044

In this study, Mg is introduced to Ni catalyst as a promoter to improve catalytic activity for the preparation of multi-walled carbon nanotubes (MWCNTs) from polypropylene. The interaction between NiO and MgO plays a crucial role in improving stability and decreasing the size of NiO particles. Consequently, the yield and graphitization degree of MWCNTs are both enhanced by the addition of Mg.

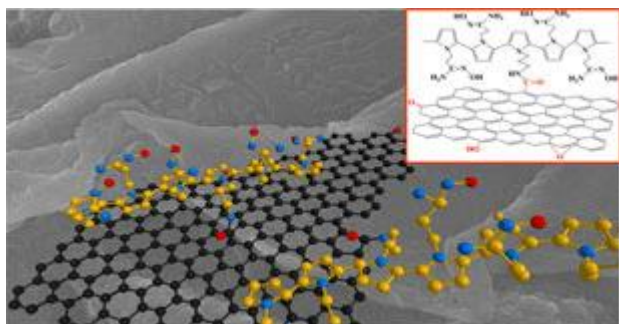


## 9. A Conductive Copolymer Based on Graphene Oxide and Poly (amidoxime-pyrrole) for Adsorption of Uranium (VI)

Hongyi Qin, Yinhua Jin, Tao Gong, Yujin Cho, Chisung Ahn, Cheolmin Shin, Changgu Lee, Taesung Kim

1650045

A novel conducting copolymer based on amidoxime groups, polypyrrole and graphene oxide was synthesized by *in situ* copolymerization. The copolymer was able to be used as an effective sorption material for the preconcentration and recovery of uranium. The maximum adsorption capacity for uranyl ion is as high as 149.57 mg/g.

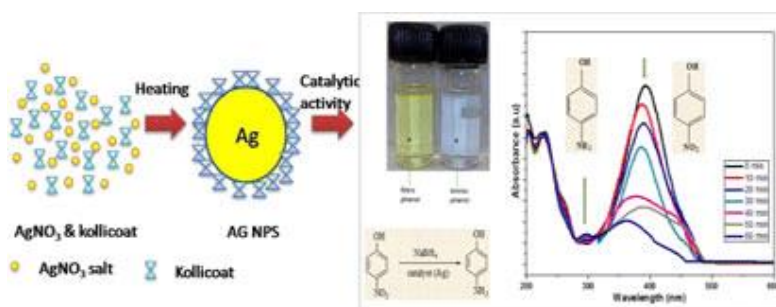


## 10. Green Synthesis of Silver Nanoparticles with Exceptional Colloidal Stability and its Catalytic Activity Toward Nitrophenol Reduction

Manisha Sharma, Amit Mishra, Vinod Kumar, Soumen Basu

1650046

Silver nanoparticles with an average size  $\sim 20$  nm were synthesized by one-step heating process in the presence of kollicoat as capping, reducing and stabilizing mediator. The synthesized NPs showed incomparable high stability against the salt addition and change of solution pH. The effectiveness of the synthesized Ag NPs as catalyst for 4-NP reduction had been evaluated. The new as-prepared polymer-stabilized Ag NPs were highly stable, efficient, eco-friendly and easy to prepare, and thus have the potential for several industrial applications.

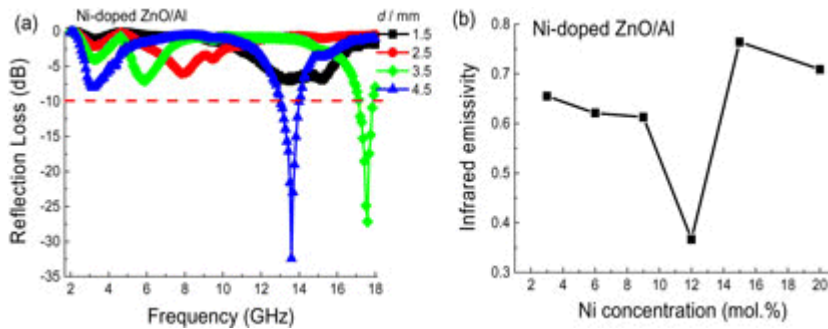


## 11. Preparation, Microwave Absorption and Infrared Emissivity of Ni-doped ZnO/Al Powders by Coprecipitation Method in the GHz Range

Ruiwen Shu, Honglong Xing, Xiaoli Cao, Xiaoli Ji, Dexin Tan, Ying Gan

1650047

Ni-doped ZnO/Al composites with infrared-microwave compatible stealth performance were prepared by a facile chemical co-precipitation method, which had the lowest infrared emissivity of 0.37 and the maximum reflection loss reached  $-32.5$  dB at 13.6 GHz with a thickness of 4.5 mm at 12 mol.% doped Ni concentration.



## 12. Preparation and Photocatalytic Performance of One-Dimensional $\text{In}_2\text{O}_3$ Nanofibers, CuO Microfibers and $\text{CuO}/\text{In}_2\text{O}_3$ Heterostructured Nanofibers by Electrospinning Process

Fei Zhao, Qifang Lu, Zhiliang Xiu, Chaofeng Zhu

1650048

The electrospun nanofibers have a smooth surface, and the surface becomes rough after calcination. In fact, the transfer and recombination of electrons and holes is a complicated process. The formation of inorganic nanofibers and the mechanism of photocatalysis was straightforwardly exhibited.

