

## Dr. Manuel A. Flores-Hidalgo

**Academic-Researcher**

Phone: (618) 1301120; Fax: (618) 1301111

Email: manuel.flores@ujed.mx

SNI Level I

**Centro de Investigación en Materiales Avanzados (CIMAV).** PhD in Materials Science. (2011)  
**Instituto Tecnológico de Estudios Superiores de Monterrey (ITESM).** Masters in Energy and Renewable Sources Management (2015), Masters in Industrial Engineering (2003)  
**Instituto Tecnológico de Chihuahua (ITCH).** Mechanical Engineering with Minor in Industrial Engineering. (1999)

### Professional Experience:

**UANL.** Associate Professor to the Masters in Science in Automotive Engineering program. 2014-2015.

**General Electric Aviation.** Program Leader, Project Leader. 2011-2014.

**Emerson, Tecnologías de Flujo.** Lead Engineer, Manufacturing Engineer. 2008-2010.

**Visteon.** Lead Engineer, Project Leader. 2003-2007.

**Delphi.** Product Engineer. 2001-2003.

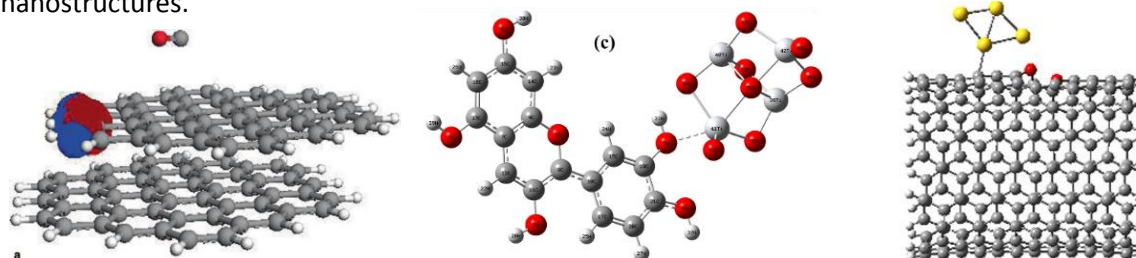
**Schraeder Bellows Parker.** Technical Sales in Automation Equipment, Hidraulics and Pneumatics. 1999-2001.

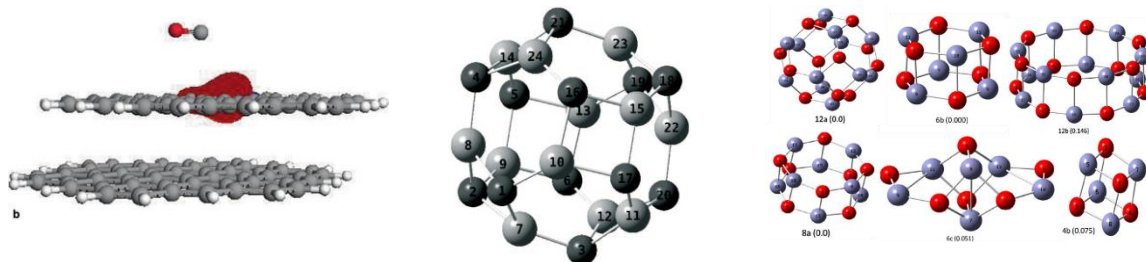
### Research Lines:

**1. Nanostructured Materials:** Design, computational simulation and developing of nanomaterials. Using nanotechnology, we seek improvement to materials properties. Using computational simulation of nanomaterials materials properties can be predicted or improved, our group uses mainly electronic structure methodologies. Example of some nanomaterials our group is working with are silver nanoparticles,  $\text{TiO}_2$  and ZnO nanoclusters, among others.

**2. Alternative Energies:** Nanomaterials applied to clean technologies such as solar cells applied to air and water remediation. A big part of his work is related to materials with photocatalytic and photovoltaic properties like nanostructured metallic oxides ZnO,  $\text{TiO}_2$  and includes pigments derived from plants such as chlorophyll or anthocyanin variants.

**3. Carbon Nanostructures:** We are also working with carbon nanostructures such as CNT, fullerene and graphene as can be observed in the pictures displayed below. Images show latest techniques within the computational simulation framework to study electronic properties of carbon nanostructures.





**2. Other Interests:** Motivated by his experience in the industry, Dr. Flores continues immersed in topics like mechanical design, product engineering, aeronautics, automotive, finite element, fluid dynamics, quality and productivity, and mechanical properties of materials. He has worked in products for different industries like the 747 aircraft engine, F150 platform, flowmeters, etc. Using simulation programs like CREO, NX, and CATIA as well as FEA and CFD with ANSYS. His work makes emphasis in mechanical properties of materials and the new manufacturing trends applied in industries like aeronautics, automotive, metal-mechanic as well as product innovation.

#### Publicaciones Selectas:

- *Geometric Description and Electronic Properties of the Principal Photosynthetic Pigments of Higher Plants: a DFT Study.* F. Torres-Rivas, **M.A. Flores-Hidalgo**, D. Glossman-Mitnik, D. Barraza-Jimenez. J. of Molecular Modeling (JMM). Volume 21, Issue 10, 2015.
- *Libro: Design and Applications of Nanomaterials for Sensors. Capítulo: Theoretical Study of bi Layer Graphene used as Gas Detector.* Springer. D. Barraza-Jimenez, **M. A. Flores-Hidalgo** and D. H. Galvan. 2014.
- *Computational Study of Au<sub>4</sub> Cluster on a CNT with and without Defects using QM/MM Methodology.* D. Barraza-Jiménez, D. H. Galvan, A. Posada-Amarillas, **M.A. Flores-Hidalgo**, D. Glossman-Mitnik and M. José-Yacamán. J. of Molecular Modeling. Vol.18, 11. 4885-4891 (2012).
- *Effects of Sulfur Substitutional Impurities on (ZnO)<sub>n</sub> Clusters (n = 4–12) using Density Functional Theory.* **M.A. Flores-Hidalgo**, D. Barraza Jimenez, D. Glossman-Mitnik. Comput. Theor. Chem. 965 (2011) 154-162.
- *Excited States Analysis of Sulfur Substitutional Impurities on (ZnO)<sub>6</sub> Clusters Using DFT and TD-DFT.* ISSN: 0166-1280. M.A. Flores Hidalgo, **D. Barraza Jiménez**, D. Glossman-Mitnik. J. Mol. Struct. (THEOCHEM). 957, 2, (2010), 100-107.

#### Directed Thesis:

*Photocatalytic Properties of TiO<sub>2</sub> Nanoclusters Doped with Sulfues and Sensitized with Pelargonidyn.* Materials Science Engineering. FCQ-UJED. Adrián Corral. (Dec 2015, In Process).