

Dimitrios Koumoulis, Ph.D.

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United States of America*

Dear Committee,

I am writing to express my utmost interest in applying as an **Assistant Professor of Physics at the Texas Tech University**.

I have earned a doctorate (Ph.D.) in Condensed Matter Physics/Materials Science & Chemical Engineering (Strongly correlated electron systems-**manganites**) and a master's degree (M.Sc.) in the field of Materials Science and Technology (**Nanoscience and Nanotechnology/ Thin Films/ Giant MagnetoResistance effect**).

Besides my research activities, I am also offering my services as an editorial board member for *Elsevier* and reviewer in numerous peer-reviewed journals.

Regarding my research experience, **as a Postdoctoral researcher (DARPA funded scholar) at the Department of Chemistry & Biochemistry, University of California, Los Angeles (UCLA)**, I have developed advanced spectroscopic (magnetic resonance spectroscopy & imaging) methodologies for the study of *transition metal borides, chalcogenides, ultrahard materials, topological insulators and thermoelectrics* (APL Materials 3, 083601 (2015), Phys. Rev. B 90, 125201 (2014), J. Phys. Chem. C 117, 8959-8967 (2013) etc.), intermetallics/superhard materials (e.g. ChemPhysChem 17, 1 (2016), J. Phys. Chem. C, 2016, 120 (5), Acta Materialia 120, 32-39 (2016) etc.), topological insulating materials (Proc. Natl. Acad. Sci. USA 112, E3645-E3650 (2015), Phys. Rev. Lett. 110, 026602 (2013), Phys. Rev. B 90, 125201 (2014), etc.) and topological superconducting materials.

During this period, I divided my time between UCLA and the national lab of particle and nuclear physics (TRIUMF) in Vancouver (Canada). I performed a series of *state-of-the-art* experiments that included: a) β -NMR Studies of Topological Crystalline Insulator States, b) Study of Vacancy Defects in Topological Insulator via μ SR, c) β -NMR Investigations of the Topological Magneto-Electric Effect, and d) β -NMR studies of the surface states of topological insulators. In many of these projects I collaborated with institutes from all around the world, including the University of British Columbia, Tsukuba University in Japan, RWTH Aachen University, University of Texas, Austin and Northwestern University, UCSB and UCR.

During my Ph.D. studies my research focused on the development of novel NMR methodology and its applications in studying relationships between structure and dynamics of complex systems, which are observed in ***strongly correlated electron systems*** with novel properties such as ***colossal magnetoresistance (manganites)***. My research experience amongst the experimental NMR procedures was complementary focused on modern experimental solid state NMR techniques and methods such as the NMR probe design/construction and cryogenic instrumentation.

My M.Sc. studies and thesis involved the study of nanostructures constituting of ferromagnetically soft/hard and antiferromagnetic layers, known as exchange bias for spintronics (*Giant Magnetoresistance*, GMR effect).

The overall experience that I have accomplished during my PhD research and postdoctoral appointment on the materials physics of advanced materials has now been translated into “know-how” for detecting their exotic properties and converting them to useful applications.

I believe that my overall experience on Condensed Matter Physics, Materials Science and Technology (Nanotechnology) fits perfectly with your department interests.

Thank you for your time and consideration.

Sincerely yours,

Dimitrios Koumoulis, Ph.D.