

Curriculum Vitae

Family Name: JONG

Given Name: UN-GI

Sex: Male

Date of Birth: 28 March 1989

Place of Birth: Pyongyang, DPR Korea

Nationality: Korean

Marital status: Married with one daughter

Affiliation: Chair in Computational Materials Design, Faculty of Materials Science, Kim Il Sung University, Ryongnam Dong, Taesong District, Pyongyang, DPR Korea

Position: Researcher



Educational records:

04/2000 – 04/2006: Middle and High School, Pyongyang, DPR Korea

04/2006 – 04/2011: Student, Department of Physics, Kim Il Sung University, Pyongyang, DPR Korea.
B. Sc., course degree.

04/2011 – 04/2014: PG student, Chair in Computational Materials Design, Faculty of Materials Science, Kim Il Sung University, Pyongyang, DPR Korea,
M. Sc., Thesis: “*Study of electronic and optical properties in correlated systems by LDA+DMFT method*”, supervised by Dr. Yu Chol-Jun.

04/2016 – 04/2019: Ph. D. student, Chair in Computational Materials Design, Faculty of Materials Science, Kim Il Sung University, Pyongyang, DPR Korea,
Ph. D. Thesis: “*First-principles study on electronic, optical and stability for perovskite solar cells*”, supervised by Prof. Yu Chol-Jun.

Professional records:

Since 04/2014 : Research scientist in Chair in Computational Materials Design, Faculty of Materials Science, Kim Il Sung University, Pyongyang, DPR Korea

Academic Degrees:

B. Sc. in Physics: 04/2011

M. Sc. in Physics: 04/2014

Thesis: “*Study of electronic and optical properties in correlated systems by LDA+DMFT method*”, supervised by Dr. Yu Chol-Jun.

Ph. D.: 02/2019

Thesis: “*First-principles study on electronic, optical properties and stability for organic-inorganic hybrid perovskite solar cells*”, supervised by Prof. Yu Chol-Jun.

Publications:

- [1] **Un-Gi Jong**, Chol-Jun Yu, Yun-Hyok Kye, *et al.*, “Anharmonic phonons and phase transitions in the vacancy-ordered double perovskite Cs₂SnI₆ from first-principles predictions” **Phys. Rev. B** 99, 184105 (2019)
- [2] **Un-Gi Jong**, Chol-Jun Yu, Yun-Hyok Kye, Yong-Guk Choe, Wei Hao, Shuzhou Li, “First-Principles Study on Structural, Electronic, and Optical Properties of Inorganic Ge-Based Halide Perovskites”, **Inorg. Chem.** 58, 4134–4140, 2019
- [3] Song-Hyok Choe, Chol-Jun Yu, Kum-Chol Ri, Jing-Song Kim, **Un-Gi Jong**, YunHyok Kye, Song-Nam Hong, “First-principles study of Na_xTiO₂ with trigonal bipyramid structures: An insight into sodium-ion battery anode application”, **Physical Chemistry Chemical Physics**,

DOI: 10.1039/c9cp00267g, 2019

- [4] Yun-Hyok Kye, Chol-Jun Yu, **Un-Gi Jong**, Kum-Chol Ri, Jin-Song Kim, Song-Hyok Choe, Song-Nam Hong, Shuzhou Li, Jacob N. Wilson, Aron Walsh, "Vacancy-Driven Stabilization of the Cubic Perovskite Polymorph of CsPbI_3 ", **J. Phys. Chem. C** DOI: 10.1021/acs.jpcc.9b01552, 2019
- [5] Song-Nam Hong, Song-Hyok Choe, **Un-Gi Jong**, Myong-San Pak, Chol-Jun Yu, "The maximum interbubble distance in relation to the radius of spherical stable nanobubble in liquid water: A molecular dynamics study", **Fluid Phase Equilibria** 487, 45-51, 2019
- [6] **Un-Gi Jong**, Chol-Jun Yu, Yun-Sim Kim, Yun-Hyok Kye, Chol-Ho Kim, Son-Guk Ri, "A first-principles study on the chemical stability of inorganic perovskite solid solutions $\text{Cs}_{1-x}\text{Rb}_x\text{PbI}_3$ at finite temperature and pressure" **Journal of Materials Chemistry A**, 6, 17994-18002, 2018
- [7] **Un-Gi Jong**, Chol-Jun Yu, Yun-Sim Kim, Yun-Hyok Kye, Chol-Ho Kim, "First-principles study on the material properties of the inorganic perovskite $\text{Rb}_{1-x}\text{Cs}_x\text{PbI}_3$ for solar cell applications" **Physical Review B** 98, 125116, 2018
- [8] Yun-Hyok Kye, Chol-Jun Yu, **Un-Gi Jong**, Yue Chen, Aron Walsh, "Critical Role of Water in Defect Aggregation and Chemical Degradation of Perovskite Solar Cells", **The Journal of Physical Chemistry Letter**, 9, 2196-2201, 2018.
- [9] **Un-Gi Jong**, Chol-Jun Yu, Gum-Chol Ri, Andrew P. McMahon, Nicholas M. Harrison, Piers R. F. Barnes and Aron Walsh, "Influence of water intercalation and hydration on chemical decomposition and ion transport in methylammonium lead halide perovskites", **Journal of Materials Chemistry A**, 6, 1067-1074, 2018.
- [10] **Un-Gi Jong**, Chol-Jun Yu, Yong-Man Jang, Gum-Chol Ri, Song-Nam Hong, Yong-Hyon Pae, "Revealing the stability and efficiency enhancement in mixed halide perovskites $\text{MAPb}(\text{I}_{1-x}\text{Cl}_x)_3$ with ab initio calculations", **Journal of Power Sources**, 350, 65-72, 2017.
- [11] **Un-Gi Jong**, Chol-Jun Yu, Jin-Song Ri, Nam-Hyok Kim, Guk-Chol Ri, "Influence of halide composition on the structural, electronic, and optical properties of mixed $\text{CH}_3\text{NH}_3\text{Pb}(\text{I}_{1-x}\text{Br}_x)_3$ perovskites calculated using the virtual crystal approximation method", **Physical Review B** 94, 125139, 2016.
- [12] **Un-Gi Jong**, Chol-Jun Yu, Yong-Su Park, Chong-Suk Ri, "First-principles study of ferroelectricity induced by p-d hybridization in ferrimagnetic NiFe_2O_4 ", **Physics Letters, A**, 380, 3302-3306, 2016.
- [13] Chol-Jun Yu, **Un-Gi Jong**, Mun-Hyok Ri, Gum-Chol Ri, Yong-Hyon Pae, "Electronic structure and photo absorption property of pseudo-cubic perovskites $\text{CH}_3\text{NH}_3\text{PbX}_3$ ($X = \text{I}, \text{Br}$) including van der Waals interaction", **Journal of Materials Science**, 51, 9849-9854, 2016.
- [14] Song-Nam Hong, Yun-Hyok Kye, Chol-Jun Yu, **Un-Gi Jong**, Gum-Chol Ri, Chang-Song Choe, Kwang-Hui Kim, Ju-Myong Han, "Ab initio thermodynamic study of the $\text{SnO}_2(110)$ surface in an O_2 and NO environment: a fundamental understanding of the gas sensing mechanism for NO and NO_2 ", **Physical Chemistry Chemical Physics**, 18, 31566-31578, 2016.
- [15] Gum-Chol Ri, Chol-Jun Yu, Jin-Song Kim, Song-Nam Hong, **Un-Gi Jong**, Mun-Hyok Ri, "First-principles study of ternary graphite compounds cointercalated with alkali atoms ($\text{Li}, \text{Na},$ and K) and alkylamines towards alkali ion battery applications", **Journal of Power Sources**, 324, 758-765, 2016.
- [16] Chol-Jun Yu, Gum-Chol Ri, **Un-Gi Jong**, Yong-Guk Choe, Sang-Jun Cha, "Refined phase coexistence line between graphite and diamond from density-functional theory and van der Waals correction", **Physica B** 434 185–193, (2014).

Attendances at conference, workshop and school:

09/2016: International Conference in 70th celebration of Kim Il Sung University Foundation, Pyongyang, DPR Korea.

Recommendation contacts:

Prof. Dr. Chol-Jun Yu, supervisor of Ph. D. work, cj.yu@ryongnamsan.edu.kp

Prof. Dr. Aron Walsh, collaborator, a.walsh@imperial.ac.uk