



**Name of Faculty: Vijay Kumar Baliyan**

Designation: Associate Professor

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**Educational Qualification:**

**Ph.D** (Liquid Crystals and Polymer Physics), **Jeonbuk National University, Jeonju, Republic of Korea**

**MTech.** Material Science & Engineering, **Thapar Institute of Engineering & Technology, Patiala**

**MSc**, Physics, **C.C.S. University Meerut**

**Total Experience: 12 years**

Academic : 1 yrs | Industry : yrs | Research : 12 yrs

**Areas of Interest:** Soft Condensed Matter Physics

**Brief Profile:**

Dr. Baliyan have done his Ph.D. from South Korea and have more than 12 years of research experience including 6.0 years of postdoctoral research and graduate student in the field of liquid crystals and polymer physics. He has worked in world-class universities throughout his research career. Previously, I was working as a postdoctoral fellow in the Center of Display Research under the Department of Electronic and Computer Engineering at **Hong Kong University of Science Technology, Hong Kong**. Earlier, he was working in the Department of Electrical and Computer Engineering, at **Sungkyunkwan University (SKKU), Suwon, South Korea**, and had his

independent fellowship from the National Research Foundation (NRF) of Korea funded by the Korean government. He spent two years in Department of BIN Convergence Technology, **Jeonbuk Nation University, Jeonju South Korea** as a Postdoctoral fellow. During his research career, he has earned a few first-author publications, including *NPG Asia Materials* (2017), *Optical Materials Express* (2016) and *Dyes and Pigments* (2019), *ACS Applied Materials & Interfaces* (2020).

## Research publications in International Journal: 9

**Total Citation Index: 150 (h-index: , i10-index: )**

(Research paper detail in APA format) (Impact factor: )(Citation: )

1. **Vijay Kumar Baliyan**, D. Lee, J. Yang, V. P. Panov, Jang-Kun Song. *Fabrication of optical vortex array by fixing standing wave mediated periodic defects in nematic liquid crystals via photopolymerization*, **Liquid Crystals**, 49, 475-484, (2022). (I.F. 3.07)
2. **Vijay Kumar Baliyan**, B. Lee, and Jang-Kun Song. *Quantum Dot Arrays Fabricated using In-Situ Photopolymerization of Reactive Mesogen and Dielectrophoresis*. **ACS Applied Materials & Interfaces** 12, 36, 40655–40661 (2020). (I.F. 10.38)
3. **Vijay Kumar Baliyan**, K.U. Jeong, Shin-Woong Kang. *Dichroic-dye-doped short pitch cholesteric liquid crystals for the application of electrically switchable smart windows*. **Dyes and Pigments** 166, 403–409 (2019). (I.F. 5.12)
4. **Vijay Kumar Baliyan**, S. H. Lee, and Shin-Woong Kang. *Spatially and orientationally patterned polymer architectures formed by photopolymerization of reactive mesogens in periodically deformed liquid crystals*. **NPG Asia Materials**, 9, 1-8 (2017). (I.F. 10.76)
5. **Vijay Kumar Baliyan**, V. Kumar, J. Kim, and Shin-Woong Kang. *Polarized photoluminescence of the polymer networks obtained by in situ photopolymerization of fluorescent monomer in a nematic liquid crystal*. **Optical Materials Express** 6, 2956-2965 (2016). (I.F. 3.07)
6. V. Kumar, A. Nasrollahi, **Vijay Kumar Baliyan**, M. H. Lee and Shin-Woong Kang. *Dual wavelength in situ photoalignment for stable planar alignment of nematic liquid crystals*. **Optical Materials Express**, 8, 2366-2377 (2018). (I.F. 3.07)
7. P. kumar, S. Y. Oh, **Vijay Kumar Baliyan**, S. Kundu, S. H. Lee, and Shin-Woong Kang. *Topographically induced homeotropic alignment of liquid crystals on self-assembled opal crystals*. **Optics Express**, 26, 8385-8395 (2018). (I.F. 3.83)
8. S. Kundu, **Vijay Kumar Baliyan**, S. H. Lee and Shin-Woong Kang. *Irreversible phase and anchoring transitions of chiral azodye-doped nematic liquid crystal triggered by photostimulation*. **Journal of Information Display** 1-6 (2015). (I.F. 4.23)

9. I. H. Jeong, I. W. Jang, D. H. Kim, J. S. Han, **Baliyan Vijay Kumar**, S. H. Lee, S. H. Ahn, S. H. Cho, Chung. *Investigation on Flexoelectric Effect in the Fringe Field Switching Mode*. **SID** Volume 44, Issue 1 1368–71 (2013). (I.F. 2.02)

### **Papers presented in International Conferences:**

#### **Oral presentations:**

1. Vijay Kumar Baliyan, J. K. Song, *Fabrication of Quantum dots array by photo-polymerization of reactive mesogen with QDs in dielectrophoresis medium*, KLCC (2020) Mokpo, Korea.

#### **Poster presentations:**

1. Vijay Kumar Baliyan, D. Lee, Jang-Kun Song. Switchable of optical vortex array generation by fixing standing wave mediated periodic defects in nematic liquid crystals via photopolymerization, (IMID) (2021), (Online conference) Korea.
2. Vijay Kumar Baliyan, B. Lee, and Jang-Kun Song. *Quantum Dot Arrays Control by Photo-Polymerization of Reactive Mesogen in Dielectrophoresis Medium*. (IMID) (2020), (Online conference) Korea.
3. Vijay Kumar Baliyan, L. G. Trung, K.-U. Jeong, and Shin-Woong Kang, *Electrically Switchable Smart Windows Using Dye-doped Short Pitch Cholesteric Liquid Crystals*, ACLC (2019), Shenzhen, China.
4. Vijay Kumar Baliyan, K.-U. Jeong and Shin-Woong Kang. *Dye-doped Short Pitch Cholesteric Liquid Crystals Used as Smart Window Applications*, Optics and Photonics Congress (2018), Busan, Korea.
5. Vijay Kumar Baliyan, A. K. Rella, K.-U. Jeong and Shin-Woong Kang. *Smart Window Applications of Dye-doped Short Pitch Cholesteric Liquid Crystals*, (ILCC) (2018), Kyoto, Japan.
6. Vijay Kumar Baliyan, L. G. Trung, S. H. Lee and Shin-Woong Kang. *Optically and Spatially Templated Polymer Networks Formed by Photo-polymerization of Reactive Mesogens in Periodic Deformed Nematic Liquid Crystals*, (ILCC) (2018), Kyoto, Japan.

7. Vijay Kumar Baliyan, L. G. Trung, A. K. Rella, K.-U. Jeong and Shin-Woong Kang. *Electrically switchable smart window applications based on cholesteric liquid crystals*, (KLCC) (2018), Kumhoo Marina, Tongyeong, Korea.
8. Vijay Kumar Baliyan, R. K. Sinha, K.-U. Jeong, and Shin-Woong Kang. *Smart Window Applications Based on Cholesteric Liquid Crystals*, (PFAM-XXVI) (2017), Jeonju, Korea.
9. Vijay Kumar Baliyan, V. Kumar, A. Nasrollahi, J. Kim, and Shin-Woong Kang. *Polarized photoluminescence of polymer film obtained by photo-polymerization of fluorescence monomer in nematic liquid crystal medium*, (IMID) (2016), ICC Jeju, Korea.
10. Vijay Kumar Baliyan, V. Kumar, M.-H. Lee, Shin-Woong Kang, Heung-Shik Park, and Jae Jin Lyu. *In-situ homogeneous alignment control of nematic liquid crystals by linearly polarized visible light*, (ILCC) (2016), Kent state, USA.
11. Vijay Kumar Baliyan, S. Kundu, J. Kim, and Shin-Woong Kang. *Polarized photoluminescence of polymer networks obtained by In-Situ photo-polymerization of fluorescence monomer in nematic liquid crystals*, (ILCC) (2016), Kent State, USA.
12. Vijay Kumar Baliyan, P. Kumar, M. B. Oh, S. H. Lee and Shin-Woong Kang. *Vertical alignment and stabilization of director pre-tilt of nematic liquid crystal doped with surface modified silica nano-particles*, (IMID) (2015), EXCO, Daegu, Korea.
13. Vijay Kumar Baliyan, S. Kundu, V. Kumar, S. H. Lee and Shin-Woong Kang. *Patterned polymer networks formed in nematic liquid crystals*, (IMID) (2015), EXCO, Daegu, Korea.
13. Vijay Kumar Baliyan, S. Kundu, S. H. Lee, and Shin-Woong Kang. *Pattern phase separation of polymer networks in elastically distorted nematic liquid crystals as a template*, (IMID) (2014), EXCO, Daegu, Korea.
14. Vijay Kumar Baliyan, P. Kumar, M. B. Oh, S. H. Lee, and Shin-Woong Kang. *Surface-modified silica nano-particles for vertical alignment and stabilization of director pretilt*, (ACLC) (2015) Busan, Korea.

15. Vijay Kumar Baliyan, S. Kundu, S. H. Lee, and Shin-Woong Kang. *Formation of polymer microstructure by elastically distorted nematic liquid crystal as a template*, (KLCC) Jeonju (2014), Korea.
16. Vijay Kumar Baliyan, S. Kundu, K.-U. Jeong, S. H. Lee and Shin-Woong Kang. *Polymerization of functional materials in elastically patterned nematic liquid crystals* (IMID) (2013), EXCO, Daegu, Korea.
17. Vijay Kumar Baliyan, S. Kundu, K.-U. Jeong, S. H. Lee and Shin-Woong Kang. *Spatially periodic nematic liquid crystal as a medium of chemical reaction*. (ACLIC) (2012), Fiji Calm, Japan.

**Papers presented in National Conferences:**

**Oral presentations:**

1. Vijay Kumar Baliyan, S. Kundu, S. H. Lee and Shin-Woong Kang, *Patterned polymer networks formation by using nematic liquid crystal as a medium of chemical reaction*, NCLC (2015) Dehradun, India.

**Patents: NA**

**International/National Conference & Workshops Attended: NA**

**FDP Attended: NA**

**Awards/Recognitions:**

1. Awarded first prize in poster presentation in (IMID) (2021) held in COEX, Seoul, (Online Conference) Korea
2. Awarded first prize in poster presentation in Optics and Photonics Congress 2018 held in Busan, Korea.
3. Awarded second prize in poster presentation in (KLCC) (2018) held in Kumhoo Marina, Tongyeong, Korea.

4. Awarded first prize in poster presentation in (IMID) (2014) held in EXCO, Daegu, Korea.
5. Awarded first prize in poster presentation in (ACLC) (2012), Fiji Calm, Japan.

**Workshops/Seminars/Conference Organized: NA**

**Membership of Professional Bodies:**

**REVIEWER:**

- Journal of Molecular Liquid- ELSEVIER

**MEMBER:**

- Indian Liquid Crystals Society (ILCS)
- Materials Research Society of India (MRSI)

**Other Achievements: NA**