

Re: In Support of Zhipeng Li's application of TriDurLE 2020 Outstanding Graduate Student Award

October 31, 2020

Dear Selection Committee,

It is my pleasure to highly recommend Zhipeng Li for the 2020 TriDurLE Outstanding Graduate Student Award. This is based on his outstanding academic record, his great efforts and productivity in research, as well as his potential in making a difference in his field. Zhipeng joined my group as a Research Assistant in January 2019. He received an M.S. in Geotechnical Engineering from the Wuhan Polytechnic University (China) in 2017 and worked as a technician at the Yangtze River Scientific Research Institute (Wuhan, China, July 2017 - Feb. 2018), and as a Research Assistant at Shandong Provincial Key Laboratory of Preparation and Measurement of Building Materials (Jinan, China, Mar. 2018 - Dec. 2018).

Outstanding Academic Record

Zhipeng is now a Ph. D candidate at WSU with a special interest in the sustainable and innovative applications of coal fly ash in civil infrastructure, including structural engineering, pavement engineering, etc. He has successfully passed his preliminary exam for his Ph.D. program. Zhipeng is very self-motivated and ready to make a difference in infrastructure sustainability research, and has developed an exceptional grounding and diverse research skills. His self-discipline and educational training are also reflected by his outstanding performance in coursework, with a cumulative graduate **GPA of 3.99** at WSU.

Great Efforts and Productivity in Research

Under my mentoring, Zhipeng has contributed great efforts towards the cutting-edge research of upcycling coal fly ash by turning it into an environmentally sustainable binder (geopolymer, alternative to Portland cement). Zhipeng has demonstrated great potential and productivity in this line of research. Only after three semesters at WSU, he has published two peer-reviewed journal articles in prestigious journals (*Fuel* and *Journal of Nanoscience and Nanotechnology*) and presented this work at the 99th Annual Meeting of the Transportation Research Board (TRB) under National Academies. In addition, he has submitted two review articles to *Resources, Conservation & Recycling* journal, one review article with the focus on the nano-engineered fly ash-based geopolymer received minor-revision feedback, and the other one was mainly focused on the reactivity of fly ashes which is also an innovative topic. Subsequently, Zhipeng has designed a few more thoughtful experimental programs, which are likely to be eventually published in top-tier scholarly journals in the next year or so, with a focus on steel tube-fly ash geopolymer concrete, durability of nano-engineered fly ash-based geopolymer structural concrete, their life cycle assessments, etc. It is noteworthy that his proposed work was also nominated and funded by David C. Gross Scholarship, **American Coal Ash Association Educational Foundation (ACAAEF) 2020** through a nationwide competition.

Published research and presentation

Zhipeng has published several scholarly articles in well-respected scholarly journals, most of which are focused on the upcycling of fly ashes. In addition to the papers mentioned above (two published in *Fuel* and *Journal of Nanoscience and Nanotechnology*, and two in review by *Resources, Conservation & Recycling*), Zhipeng has also been a coauthor of several other articles. The full list is provided as follows.



1. Li, Z., Shi, X. Graphene Oxide Modified, Clinker-Free Cementitious Paste with Principally Alkali-Activated Fly Ash. *Fuel*, 2020, 269, DOI: [10.1016/j.fuel.2020.117418](https://doi.org/10.1016/j.fuel.2020.117418).
2. Xu, G., Li, Z., Shi, X. Reactivity of Coal Fly Ash Used in Cementitious Binder Systems: An Overview. *Resources, Conservation & Recycling*, 2020, in review.
3. Li, Z., Fei, M., Huyan, C., Shi, X. Nano-engineered, Fly Ash-Based Geopolymer Composites: An Overview. *Resources, Conservation & Recycling*, 2020, minor revision.
4. Tang, Z., Li, Z., Fan, L., Gong, J., Zhong, J., Shi, X. Effect of Surface Tension, Foaming Stabilizer, and Graphene Oxide on the Properties of Foamed Paste. *Journal of Nanoscience and Nanotechnology*, 2020, in press.
5. Li, Z., Gong, J., Du, S., Wu, J., Li, J., Hoffman, D., Shi, X. Nano-montmorillonite Modified Foamed Paste with High Volume Fly Ash Binder. *RSC Advances*, 2017, 7, 9803–9812. DOI: [10.1039/c6ra26968k](https://doi.org/10.1039/c6ra26968k).
6. Gong, J., Li, Z., Zhang, R., Li, J., Shi, X. Synergistic Effects of Nano-montmorillonite and Polyethylene Microfiber in Foamed Paste with High Volume Fly Ash Binder. *Journal of Nanoscience and Nanotechnology*, 2019, 19(8), 4465–4473. DOI: [10.1166/jnn.2019.16353](https://doi.org/10.1166/jnn.2019.16353).
7. Gong, J., Shen, Z., Tong, Y., Li, Z., Shi, X. Electrochemical Chloride Extraction and Inhibitor Injection in Salt-Contaminated Repair Mortar. *International Journal of Electrochemical Science*, 2018, 13(1), 498–513, DOI: [10.20964/2018.01.35](https://doi.org/10.20964/2018.01.35).

Zhipeng has also been actively participating in professional societies, being a student member of the American Society of Civil Engineers (ASCE) and the American Concrete Institute (ACI). He has also provided peer review as a volunteer for several journals, including the Journal of Infrastructure Preservation & Resilience, Construction and Building Materials, Fuel, etc.

In summary, I give Zhipeng Li my highest recommendation and believe he will be an outstanding candidate for this award. Please feel free to contact me if you have any question regarding his credentials. Thank you!

Sincerely,

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