

Research visit to Sakabe laboratory for Laser-Matter Interaction Science

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Advance designing of functional materials (BiATri)

HiLASE facility, Institute of Physics

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I trained as a Chemical Physicist (University of Edinburgh), and now work in the field of laser matter interaction. My PhD research focused upon Advanced and novel techniques in laser induced forward transfer (LIFT). This is a technique which utilizes a short laser pulse to eject material from one surface to a defined location on another. I'm currently working in the Czech Republic for Professor Bulgakova, and with her help and Dr Mocek, we organized a collaboration with Professor Sakabe and Associate Professor Hashida at the University of Kyoto.

Through this 3 month partnership I have been able to research the Laser induced Forward transfer of gold nanoparticles from thin nanolayer gold films, via ultrashort 40 fs 800 nm laser pulses of varying pulse energy. Importantly, I was able to use a pre-existing setup, that allowed me to investigate the effect of two pulses, irradiating the gold surface where the first pulse was below a LIFT threshold and the second pulse was of higher energy at an adjustable time separation from 0-1300 ps. This allowed the generation of morphologically varied nanoparticles alongside adjustable nano-antennae like objects.

During my time out here I managed to cycle across the beautiful Islands stretching from Onomichi to Imabari in the southwest. I also enjoyed journeys to extremely busy locations like Tokyo, and the extreme contrast of hiking around Hakuba in winter. I'd like to thank the students and staff who helped me perform my research and showed me around Kyoto and introduced me to different styles of food.

