Award presented by Former Ambassador to Thailand Mr Quinton Quayle on behalf of Mr James Menzies CEO of Salamander Energy

Your Excellency, Ladies and Gentleman, it is a great honour to be here tonight to receive this prestigious award, and I would like to thank the Anglo-Thai Society most sincerely for recognising my work in this way. I must say that this award is not mine alone, and I would like to recognize and acknowledge others who have supported and helped me.

My deepest appreciation is for my mother and father for their hard work and dedication, taking care of me; many thanks to Dr Michael Coppins, Prof. John E. Allen and Dr Minas Bacharis, my supervisors, and every past and current colleague in our dusty plasma team for supporting me throughout my study at Imperial college London; many thanks to Mr Tanapat Deesuwan, Mr Supakchai Ponglertsakul, Mr Ekkarat Pongophas, Dr Chedtha Puncreobutr and all my friends for supporting me for many years; and finally many thanks to the Anglo-Thai Society for offering the educational award to students every year. The award encourages them to keep researching and ensure that their research works are valuable and recognised by people.

Next, I would like use this chance to sum up my PhD research about plasma physics and nuclear fusion. In nuclear fusion, a pair of high energy atomic nuclei are fused releasing bond energy. The nuclei are ions in a high temperature plasma. Fusion is the energy source of the sun. Thus the fusion programme aims to put a mini-sun into a power station. This provides an environmentally benign energy source which has abundant fuel reserves.

The most successful fusion reactor is called the tokamak. In this device the plasma is confined by magnetic forces. However, transient plasma outbursts destroy the inner tokamak wall and produce solid or liquid macroparticles. They can deposit impurities in the hot fusion plasma, which can lead to instabilities, and even the shut-down of the reactor. Moreover, the macroparticles give rise to other serious problems, for example fuel dilution and health and safety issues.

Because of their crucial effects in a fusion plasma system, I have been inspired to study metallic macroparticle motion and the associated impurity deposition. We hope that our studies on the metallic macroparticles may help us to understand their behavior in modern and future tokamaks, notably the international next-step fusion tokamak ITER. This should get us closer to commercial energy production, and this will bring benefits to all people. There will be special benefits for Thailand, because our country has its own advantages for reactor mantainance due to its geography. We can abundantly extract deuterium, one of the main fusion fuels, from sea water, and tungsten, the main inner wall material, is produced in Thailand. Thus we can maintain fusion operations with less reliance on imports from abroad.

In addition to fusion, improved understanding of molten macroparticles in plasma should improve plasma spraying. This is an industrial process, involving the use of a plasma torch to melt metallic powder, which is then carried in a jet of plasma to the required surface. This technique is widely used for surface coating in many industries, and our "misty plasma" studies should enhance this process.

Mr NOPPARIT SOMBOONKITTICHAI