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Spider silk and glue as biomimetics

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Abstract
With toughness greater than Kevlar®, spider dragline silk is nature's greatest performing fibre. Accordingly, there is immense interest in generating new synthetic fibres that mimic its mechanical performance. Likewise, spider gluey silks are remarkable materials as they retain their adhesive performance across environments and are activated by water soluble salts and glycoproteins. Biomimetics is a growing new field that looks to nature for inspiration to synthesize new high performance materials and processes. Nonetheless, there is currently little cross disciplinary engagement between biologists and engineers, meaning most biomimetic programs are making slow progress. I have expanded my spider silk research program, in which I have investigated the ecological and evolutionary basis for spider dragline and gluey silk property variability, to probe the physiological, biochemical, and genetic basis for silk mechanical property variability using tools such as solid and solution NMR. Furthermore, I have initiated work with engineers and designers to develop fibre spinning technologies to produce synthetics for incorporation into a range of new practical smart materials and adhesives.

Profile
Dr Sean Blamires graduated from the University of Sydney with a PhD in Biological Science investigating the ecology and physiology of spider webs. During a four year post-doc at Tunghai University in Taiwan he focused more heavily on the biology and biochemistry of spider silks and glues and their production mechanisms. He now a Postdoctoral Fellow at the University of New South Wales and has over 60 publications on these topics.

Staff and students at all levels are welcome to attend.

Venue and Time:
This talk will be held on Friday Feb 22 at 2 pm at the Campbelltown Campus in Building 21, Lecture Theatre 5 (CA. 21.G.03).

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