Jacqueline Burgher





BA, Chemistry (Anderson University) BA, Mathematics – Economics (Anderson University) Master's of Business Administration (Anderson University) PhD Student in Chemical Engineering (Washington State University) Advisor: Bernard Van Wie

The NSPIRE IGERT Program is a multidisciplinary student doctoral training program designed to create a new generation of scientists with broad and rigorous training in nitrogen cycling who seamlessly integrate nitrogen cycle science for effective communication with public policy makers.

Research title: Development of a novel teaching pedagogy to address student conceptual change in the nitrogen cycle.

Jacqueline is interested in representing the nitrogen cycle in a miniaturized physical system, in the technical issues surrounding that miniaturization, and in making nitrogen measurements to understand the system. The aim is to use this system to introduce contemporary teaching pedagogies that address and repair student misconceptions regarding the nitrogen cycle. When entering science and engineering courses students assimilate new knowledge with preconceptions to undergo conceptual change and develop new mental models of scientific phenomena. However, students often retain or even develop misconceptions and incorrect mental frameworks. Jacqueline will first determine common robust misconceptions in the nitrogen cycle and develop a theoretically based educational intervention of the core process in the N₂ cycle aimed at facilitating correct conceptual understanding. The model will then be implemented in undergraduate classrooms and assessed using contemporary education methodologies.

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