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Synthesis and Application of Novel Coumarin-Triazole-Based Polymeric Sensors Towards Metal Ion Sensing

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One of the greatest challenges in South Africa are the pollutants which we are exposed to within our environment.[1] The mismanagement and release of toxic analytes *via* different chemical, agricultural and industrial processes has led to a critical need for advanced monitoring systems for environmental protection, remediation and restoration.[2,3] Industrial processes release a plethora of different pollutants into the earth, atmosphere and aquatic ecosystems.[4] Most pollutant causing activities are due to mining, agriculture, industry and chemical storage. Contaminants released by these processes are not biodegradable and may be able to exude into water systems where they present an immense threat to environmental and human health.[5] The diversity of analytes released into the environment is greater than the number of sensors able to detect these species. Clearly, there is a need for a rapid and low-cost means of detection, recognition and monitoring of these analytes. Fluorescent coumarin-triazole-based polymeric materials were designed and investigated as potential sensors for metal ions.

The Cu(I)-catalyzed 1,3-dipolar cycloaddition of azides and alkynes was the focus method of polymerization to form the triazole moiety. The coumarin-triazole units formed the backbone of these polymeric systems connected by ether chains of various lengths (**Figure 1**). The photophysical properties of the starting monomers and polymers were investigated. The polymers were tested for their chemosensing potential towards various metal ions using emission properties. The results of these chemosensing properties will be discussed in the poster