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Abstract Formulary

Presentation type: **Oral** ✔ **Poster** ☐

Title: Carbon quantum dot functionalized polyvinylpolysiloxane aerogels for photoluminescent chemical sensing

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ABSTRACT (Space limited to 2200 characters)

Carbon quantum dots have emerged in the past decade as an interesting material with unique luminescent properties that are sensitive to their environment. As such, they have been demonstrated as potential bio-based materials for optoelectronics, photocatalysis, chemical sensing and bioimaging/biosensing applications among many others. Despite the large amount of potential applications only a strikingly limited number of examples exist that have demonstrated the integration of carbon quantum dots into aerogels. However, such functionalized aerogels could be useful for many of these applications by simultaneously taking advantage of the outstanding optical properties of carbon quantum dots and the unique physical properties of aerogels. Therefore, we sought to develop strategies to incorporate carbon quantum dots covalently into aerogels. Several immediately obvious potential synthesis routes were unsuccessful. However, we have devised a strategy that uses polyvinylpolysiloxane-aerogels which are very suitable due to their mechanically robust, flexible properties and the high achievable transparency. The synthesis entails a facile one-pot reaction with a brief quantum dot functionalization step prior to the sol-gel process. This strategy yields transparent monolithic aerogels that retain and exhibit pronounced photoluminescence which is furthermore dependent on the chemical environment.