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**Preparation of a low bleeding polar stationary phase for hydrophilic
interaction liquid chromatography**

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Abstract

A common drawback of silica-based polar stationary phase is obvious bleeding probably resulting from silica dissolution in water attracted onto silica gel. Recently we have reported a polyvinyl alcohol (PVA) encapsulated silica gel stationary phase for hydrophilic interaction liquid chromatography (HILIC), which demonstrated good chromatographic performance. Although PVA coating outside could shield SiO_2 inside from erosion by aqueous solution to a certain degree, obvious bleeding of such phase was still observed. To eliminate or reduce the bleeding level of the phase, fabricating multi-layers of PVA coating crosslinked with glutaraldehyde onto silica gel is performed (PVA-GA-Sil). ~20-fold decrease of the bleeding for PVA-GA-Sil can be achieved relative to bare silica gel, which is much lower than (or comparable to) commercial HILIC phases. PVA-GA-Sil also showed chromatographic performance and demonstrated

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