

The Use of AFM-IR to Study Water in Organic Coatings

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The ideal corrosion protection coating would behave as a perfect barrier, preventing the transport of water, ions, and oxygen between the corrosive environment and a metal surface. In reality, despite the well-established efficacy of corrosion resistant organic coatings providing decades of effective service in some cases, these are well-known to sorb water and potentially allow transport of ions.

The recently developed AFM-IR system, based on the combination of atomic force microscopy with infrared spectroscopy, has been used to provide new insights into the microscopic state of water within an organic coating both as produced and after exposure to a corrosive environment. These new insights complement information from more traditional methods of characterisation.

- a) S. Morsch, S. Lyon, P. Greensmith, S. Smith, S. Gibbon, *Prog. Org. Coat.* **2015**, 78, 293-299
- b) S. Morsch, S. Lyon, S. Smith, S. Gibbon, *Faraday Discussions – Corrosion Chemistry*, **2015**, accepted