

**Title** Automatic freshness assessment of cod (*Gadus morhua*) fillets by Vis/Nir spectroscopy  
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### **Abstract**

VIS/NIR spectroscopy for differentiating between fresh and frozen-thawed cod fillets and for assessing the freshness as days on ice has been evaluated. Both a handheld interactance probe for doing quick measurements of single fillets and an imaging spectrometer for doing online analysis at industrial speed of one fillet per second, have been used. Results show that frozen-thawed cod fillets can be fully separated from fresh fillets using a small subset of wavelengths in the visible region. Freshness as days on ice can be determined with an accuracy of 1.6 days on individual fillets. The results indicate that oxidation of hemoglobin and myoglobin during freezing-thawing and cold storage on ice are explaining most of the variations seen in the visible region of the spectrum.