MatMix 1.0,
a novel material probe for quantitatively measuring visual perception of materials
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Introduction
- How can we measure the visual perception of material qualities quantitatively?
- In this study, we developed a material probe (MatMix 1.0) to tackle the above-mentioned question and tested the probe with human observers.

MatMix 1.0

Methods
- We tested the probe for stimuli consisting of 5 sets of optical mixtures, namely:
  - The original set (office light)
  - A set for a different viewpoint (quite direct light)
  - Systematical variation of the lighting on material appearance

Results
- The diagonal values in the matrices A represent the perceptual relations between each material in the office light (the probe) and one of the 5 scenes (the stimulus).
- The residuals in the matrices A represent how good the solved linear factor matrices fit into the linear equation. On average, the residuals were less than 0.1.

Examples
- Half velvety and half specular mixture in ambient light appears to match matte in office light.
- Half velvety and half specular mixture in focus light appears to match velvety in office light.

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Conclusions
- Inexperienced observers are able to handle MatMix 1.0 well and match on the basis of perceived material qualities.
- Due to complex material-lighting interactions, perceived material qualities will depend on both lighting and materials.

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