Sediment description: the practical basics
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The paper by Schnurrenberger and others (2003) is an attempt to codify the description
terms used in lake sediment studies. Familiar terms like "gyttja" and "marl" are so
loosely used as to have become essentially meaningless for the purpose of
communicating *compositional* information between researchers. With the development
of large drilling projects and the increasingly interactive network of lake sediment
studies, the adoption of a common terminology is essential. The paper is an attempt at a
comprehensive component-based system that can be used for all lake sediments; for our
purposes today we can ignore evaporites, peat, and the coal series . . . The scheme is
intended to be prescriptive without unnecessarily constraining the user.

> **The classification scheme**
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> The sediment classification system employed at LRC relies on two
> primary types of observations: 1) the macroscopic structure of the
> sediment, i.e., sedimentary structures and textures (bedding features,
> texture, color) and 2) the identification of the major and minor
> components of the sediments, e.g., clay, carbonate mud, peat. These two
> observations are formalized into the scheme below:
>
> **1. Color + 2. Bedding + 3. Major Modifier + 4. Principal Name + 5.
> Minor Constituents**
>
> E.g., Dark reddish brown, massive, feldspathic clay with carbonaceous
> debris and trace gastropod fragments.
>
> Terms 1-2 describe macroscoble features observable on split or cleaned
> sediment cores or on outcrops . . . Terms 3-5 describe the nature of the
> components that comprise the sediments. These components must be
> analyzed by microscopic observation of smear slides and coarse-fraction
> sievings . . . The two types of data, macroscopic structure and microscopic
> compositional analysis, are integrated into the formalized description
> above.
> <div align="center">Schnurrenberger et al. 2003, p. 144</div>

Color is determined most reproducibly by comparison with a Munsell Soil Color chart.
Some of the Munsell names for colors are odd, but their alphanumerical values (e.g., 5YR
2/1) are unique.

Bedding includes description of the thickness and repetitiveness of layers and contacts
(bedding planes) between them. In general "laminations" are <1 cm thick and "beds" are
>1 cm thick. We frequently employ both a verbal and a numerical descriptor, such as
"finely laminated (0.5-1 mm)." Contacts are described as "sharp," "diffuse," or
"indistinct."

Major Modifiers include grain roundness and sorting, fabric, mineralogy, plant taxon, degree of decomposition of organic matter, etc.

Principal Name is taken from the largest percentage component identified in smear slide analysis. For each main component, these are:

Clastics:

> **Sand/silt/clay**, and combinations thereof (see figure on p. 147)

Carbonates:

> **Mud**, usually used with a percentage modifier, e.g., "carbonate (70%) mud"

Organic matter:

> **Peat** if coarse-textured with identifiable plant fragments
>
> **Sapropel** if composed of amorphous, decayed organics

Non-organic matter biological remains:

> **Ooze** if composed of microfossils
>
> **Hash** if composed of macroscopic shells or other hard parts

Minor Constituents are other important components of the sediment, as identified in smear slide (e.g., *Phacotus*) or macroscopic (e.g., gastropod) view.

Note that for purposes of language(s) structure, the parts of the sediment name may not be in order (1-5).

Reference (pdf version):
Schnurrenberger, D.S., J.M. Russell, and K.R. Kelts, 2003. Classification of lacustrine sediments based on sedimentary components. *J. Paleolimnology* 29: 141-154.